



Confederation of Indian Industry

Journey of Two Decades  
**A GREEN CITY  
CASE STUDY**

**PUNE CITY**

IGBC PLATINUM RATED GREEN CITY

**IGBC GREEN CITIES INITIATIVE**

Plan | Policy | Projects

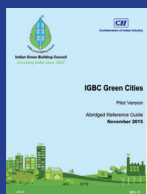


# GREEN CITIES

## The concept of Green Cities

Cities are the engines for social and economic growth of a country. The urban sector contributes to nearly 70% of the nation's GDP. As per 2011 census, 31% of India's total population resides in urban areas. It is estimated that by the year 2030, the urban population would rise to 42% of the total population of the country. Urban areas/Cities occupy only 4% of Country's total land footprint and leads to 70% of GHG emissions. It is in this context, planning principles must include sustainable urban development principles into city planning framework. One of the solutions is by introducing the concept of 'Green Cities' to convert environmental problems into opportunities.

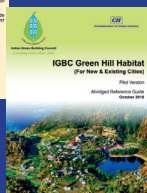
The 'Green Cities' concept seeks at promoting an eco-friendly city that balances social, economic, and environmental dimensions, as well as good urban governance as its foundation. Also, one of the main concerns which needs to be stressed upon is optimal and efficient use of natural resources like water, energy and land. Urban planners, urban designers, and architects need to work in close collaboration with local administration and communities to ensure that integrated planning and design thinking is undertaken to conceive a city based on sustainable / Green planning principles.



**IGBC Green Cities Rating System (For Greenfield Cities)**  
Green Rating for City Master Plan & Design



**IGBC Green Cities Rating System (For Existing Cities)**  
Green Rating for City's Operational Performance



**IGBC Green Hill Habitat Rating System (For Greenfield and Existing Hill Cities)**  
Exclusive Green Rating for Hill-centric Development

**25 CITIES**  
GOING GREEN IN INDIA

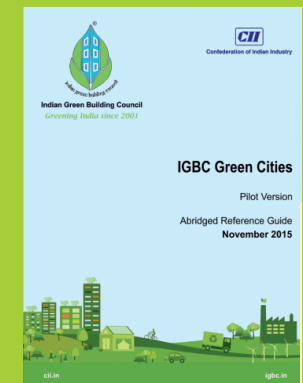
## IGBC Green Cities Rating for Greenfield Cities

Greenfield developments refer to the creation of planned communities, industries or commercial hubs etc on previously undeveloped land. Greenfield development is perceived as convenient as there is no limitation of previous or surrounding areas while developing a Greenfield site. This kind of development requires a good amount of financing since there is no previous infrastructure provision. Greenfield developments are required around cities in order to address the needs of the expanding population. Comprehensive development in the greenfield cities will improve quality of life, create employment and enhance incomes for all, leading to inclusive cities.

India is among one of the first few countries to develop an exclusive rating system for Green Cities. IGBC Green Cities Rating, standards for greening of such large developments, based on sound environmental principles has been launched in 2015.

IGBC is working closely with development authorities and developers to apply green concepts and planning principles in several Indian Cities, resulting in reduced environmental impacts that are measurable and thus improving the overall quality of life.

All Greenfield Cities can adopt green masterplanning principles during the planning and urban design



Launch of IGBC Green Cities Rating (For Greenfield Cities) by Shri Poonamchand Parmar, Principal Secretary (Forest & Environment), Govt. of Gujarat at Green Building Congress 2015



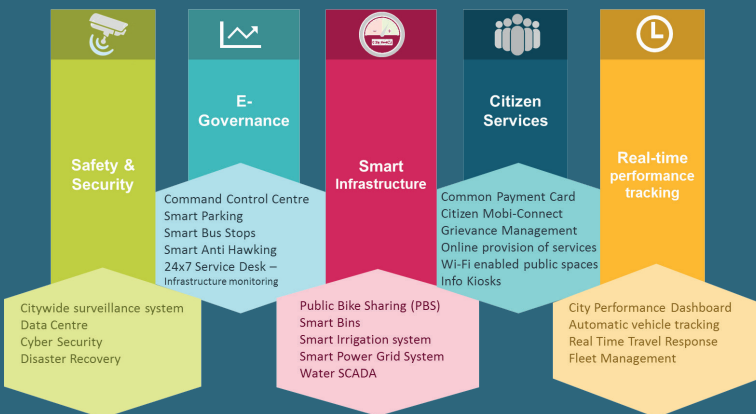
# IGBC Green Cities Rating for Greenfield Cities

## Green Cities Assessment Matrix

# GREEN



# SMART



## Key Benefits for Greenfield Cities going Green



India has 40 cities with more than a million people, 396 cities with between 100,000 and 1 million people, and 2500 cities with between 10,000 and 100,000 people. In the last 70 years, more than 10 greenfield cities have been developed in India – Bhubaneswar (1946), Salt Lake City – Kolkata (1958), Gandhinagar (1965), Chandigarh (1966), KK Nagar – Chennai (1970), Navi Mumbai (1972), Noida (1976), Naya Raipur (2000), Delhi-Mumbai Industrial Corridor with 8 Industrial Cities (2006) . In addition, numerous sub-city development projects have been executed in metro cities in the country.

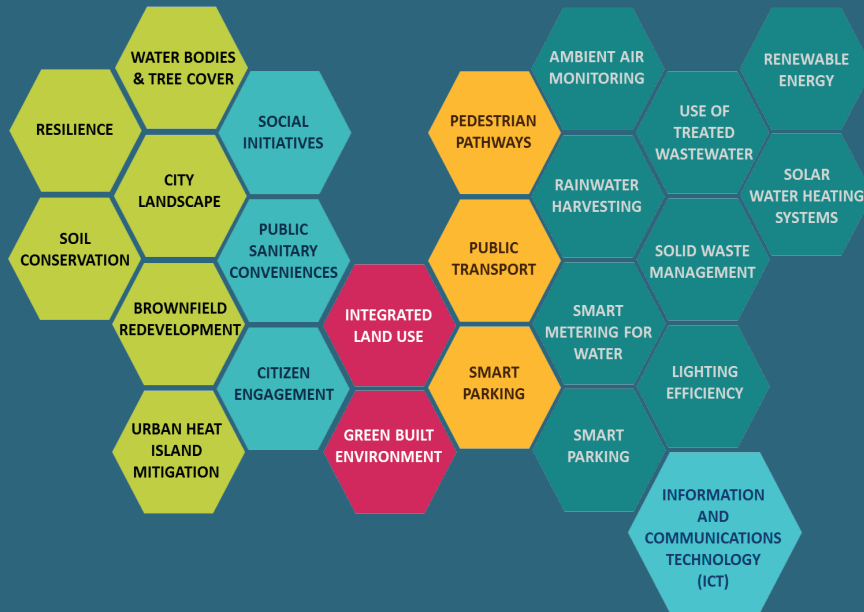
All these developments highlighted the need for holistic planning, criticality of infrastructure-link development and availability of employment opportunities in the near vicinity. India is poised to have 600 million urban population by 2031. This has to be seen in a larger eco-system and policy perspective.

Greenfield development has the advantage of flexibility in planning, construction and infrastructure development

# IGBC Green Cities Rating for Existing Cities

## Green Cities Assessment Matrix 24 City level Indicators

All Existing Cities can Assess their Green Status based on the following Green City Indicators



# Key Benefits for Existing Cities going Green

## Benefits of Existing Cities adopting Green Cities Assessment Framework



RESULTING IN ENHANCED QUALITY OF LIFE IN CITIES

# Pune

 City Area  
**519 Sq.km**

 Population Density  
**11304 per Sq.km**



Source: Pune City Digital Strategy, PMC

 Total Population  
**35.56 Lakh**

 Working Population  
**67.24%**

| 24 Indicators                                      | Sub-Indicators  | Action Initiated | Description  |
|--|---|------------------|--|
| <b>Resilient Measures for Climate and Disaster</b> | Flood Level Regulations   | Plan             | Sector wise plans of Pune city showing 100-yr flood plains indicating red and blue line (PMC)  |
|  | Hydraulic Plan  | Project          | Pune River Rejuvenation Project - 44kms of Mula, Mutha and Mula-Mutha under study (CWPRS)  |
|  | Earthquake Hazard Risk Zone   | -                | -  |
|  | Cyclone Hazard Risk Zone  | -                | -  |
|  | Protective measures to address encroachment.  | Project          | Drone based live streaming   |
|  | Resilience Action Plans   | Frame work       | Part of 100 resilient cities (Rockefeller Foundation)  |
| <b>City Soil Conservation</b>                      | City soil mapping   | Plan             | District Soil map  |
|  | Bye laws/ Policy mandating top soil preservation  | Policy           | Draft Notification mandating the removal, stacking & protection of topsoil for all new constructions   |
|  | Sanctioning procedure for new construction projects with mandatory 'Soil Erosion and Sedimentation Control Plan'.                   | -                | -  |
| <b>Preservation of Water Bodies and Tree Cover</b> | State waterbodies census  | -                | 97,062 water bodies have been enumerated in Maharashtra:<br>• Rural: 99.3% (96,343)<br>• Urban: 0.7% (719)   |
|  | Comprehensive urban water bodies master plan  | -                | -  |
|  | Protective measures to preserve existing waterbodies  | Project          | Pashan lake eco restoration, Pune River rejuvenation project, Ram Nadi restoration, Urban Water Body Rejuvenation Project.   |
|  | Comprehensive urban forest master plan/ City Tree Inventory map   | Plan             | <ul style="list-style-type: none"> <li>• Tree Census Programme since 2009</li> <li>• Ward wise tree census with data on 25+ attributes of each tree (PMC)</li> <li>• Existing tree cover AI based study of past 50 yrs (PKC &amp; PSCDCL)</li> </ul> |
|  | Policy to mandate restoration of existing trees during construction and compensatory afforestation (as per MoEF / State guidelines) | Policy           | Maharashtra Compensatory Plantation Rules (1:3)  |
|  | City green cover  | Project          | Periodic tree plantation drives (PMC)  |

\* The indicators are assessed based on documentation from PMC in 2022



| Present Status   | Over the Years  | Application | Risk (Low/Moderate/High) |
|--|---|-------------|--------------------------|
| Red & Blue Flood Line is falling in parts of existing developed area.  | -   | Pan city    | Moderate                 |
| Proposed land use shows 64% channelized river, 19% embankment and 17% under gardens/urban forest/ open grounds.  | -   | Area Based  | Low                      |
| Moderate hazard zone includes parts of Mulshi, Velhe and Bhor (Outside PMC limits)   | -   | Pan city    | Moderate                 |
| Moderate hazard zone includes parts of Mawal, Mulshi and Velhe (Outside PMC limits)  | -   | Pan city    | Moderate                 |
| Promotors and contractors to view live drone footage.  | -   | Area Based  | Moderate                 |
| 15.87% untreated sewage inflow into Mula-Mutha river (ESR 2021-22)   | -   | Pan city    | Moderate                 |
| Analysis of 300+ actions (plans, strategies, programs, projects, practices, initiatives, legislations, and funding actions) & prepared Pune resilience strategy document | -   | Pan city    | Moderate                 |
| Low nitrogen and phosphorus content, high potassium content and Soil reaction pH (6.5-7.5) (Comprehensive District Agricultural Plan,2011)                               | -   | Pan city    | Low                      |
| Draft policy under preparation   | -   | Pan city    | -                        |
| -  | -   | -           | -                        |
| -  | -   | Pan city    | -                        |
| -  | -   | -           | -                        |
| Increase in lake area:<br>Pashan lake<br>2000: 3.35 lakhs sqm. 2022: 4.62 lakhs sqm.<br>Katraj lake<br>2004: 1.91 lakhs sqm.<br>2022: 2 lakhs sqm.                       | 104% increase in restoration project area in 2 decades<br><br>7.95 m increase in ground water level since 2006 (GSDA) | Pan city    | Moderate                 |
| Registered trees:<br>2010: 20 lakhs<br>2013: 38.6 lakhs<br>2019: 40.1 lakhs<br>2021: 51 lakhs<br>(Geo Tagged)  | 2 lakhs trees added YoY since 2010 (PMC)  | Pan city    | -                        |
| -  | -   | Pan city    | -                        |
| 33% green cover planned as part of landuse in PMC master plan.   | -   | Pan city    | -                        |



| 24 Indicators  | Sub-Indicators   | Action Initiated | Description   |
|--|--|------------------|---|
| <b>City Landscape</b><br>(Public green spaces)                 | Urban landscape area   | Project          | Bio-Diversity Parks: 10.81 sqkm.  |
|  | Percentage of developed area within 400m of Urban landscape  | -                | Proximity based on google map   |
|  | Green spaces per capita  | -                | 43.42 lakhs sqm. for 34 lakhs population  |
|  | Trees per person   | -                | 51 lakhs trees for 34 lakhs population  |
| <b>Encourage Development in Environmentally Degraded Areas</b> | List/City plan highlighting all the environmentally degraded areas notified by CPCB/SPCB   | -                | CPCB website with list of notified contaminated sites in Maharashtra. Pune district doesnot feature in the list.  |
|  | Policy document encouraging future developments in environmentally degraded areas after taking appropriate remediation measures. | Policy           | State has published the list of contaminated land categories for construction.  |
|  | Policy for industrial lands remediation and brown filed redevelopment  | Policy           | MPCB has mandated polluting industries for remediation of the site.   |
| <b>Urban Heat Island Mitigation</b>                            | Extract of DCR/ State bye-laws highlighting cool roof policy   | Policy           | Draft Notification mandating the cool roof strategies for all new constructions   |
|  | Extract of DCR/ State bye-laws highlighting mandate/ incentive for solar rooftop to cover exposed roof area                      | Policy           | Interest subsidy besides property tax rebate to incentivize solar rooftop as urban heat island reduction strategy for buildings.  |
|  | Percentage of carriage-way & service roads shaded with tree cover.   | Policy           | Mandate 1 tree at <ul style="list-style-type: none"> <li>• Every 20 m in collector, local roads.</li> <li>• Every 10m in case of arterial, sub arterial roads.</li> </ul> |
|  | Percentage of carriage-way & service roads with cool pavement strategy   | Project          | Road Asset Management Survey of PMC confirmed 387 km of road length out of 1398 km network with concrete roads.   |
| <b>Social Initiatives</b>                                      | Percentage of urban population in slums  | -                | -   |
|  | Slum redevelopment & Occupancy to tenements  | Project          | Slum Rehabilitation Programme by SRA, Govt. of Maharashtra and PMC initiatives  |
|  | Affordable Housing Dwelling units  | Project          | Affordable Housing Project/EWS Housing Project  |

| Present Status  | Over the Years   | Application | Risk (Low/Moderate/High) |
|---|--|-------------|--------------------------|
| 12.5% of landuse area<br>1,073 acres  | Urban landscape area doubled since 2010  | Pan city    | -                        |
| 4.19% forest area   | -  | Pan city    | -                        |
| 7.35% hills/biodiversity parks of landuse area  | -  | Pan city    | -                        |
| 1.3 sqm per capita  | -  | Pan city    | -                        |
| 2 tree per person   | -  | Pan city    | -                        |
| -   | -  | -           | Low                      |
| Remedial & Bioremediation measures initiated by CSIR-NEERI.   | Kachra depot transformed into Arvut van (2016-18, PMC)<br><br>Kothrud garbage depot land redevelopment to get 7 lakh square feet construction for leasing out. | Pan city    | -                        |
| Drafted guidelines for identification of polluting industries   | -  | Pan city    | Moderate                 |
| Draft policy under preparation  | -  | Pan city    | Moderate                 |
| 5% rebate on property tax for solar rooftop (PMC)   | -  | Pan city    | Moderate                 |
| 20% of the road network is shaded   | -  | Pan city    | -                        |
| Green-buffers along the Traffic corridors, 36 road medians and traffic islands maintained on PPP basis.           | -  | Pan city    | -                        |
| Pilot road sections covering 28% of road network with cool pavement measures (PMC)                                | -  | Area Based  | -                        |
| 32.5% of urban population living in slum areas of Pune city.  | -  | -           | -                        |
| 1104 projects (2020)<br>Occupancy given to 11,132 tenements(2021)   | 34% increase in SRA Projects since 2010 (PMC)<br><br>13 fold increase in no. of tenements since 2010 (PMC)   | Pan city    | Low                      |
| 1.33 lakhs affordable dwelling units grounded in PMC area (2023)<br>12,850 dwelling units grounded YoY since 2016 | 21 fold increase in no. of dwelling units since 2016 (PMC)   | Pan city    | Low                      |

\* The indicators are assessed based on documentation from PMC in 2022



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| 24 Indicators                | Sub-Indicators   | Action Initiated | Description   |
|------------------------------|--|------------------|---|
|                              | Policy mandate on inclusive housing for addressing EWS/LIG in housing projects             | Policy           | Model State Affordable Housing Policy-2015. PMC DCR mandate 20% of the net plot area to be developed for EWS/LIG tenements  |
|                              | Policy on dedicated hawkker zone   | Policy           | <ul style="list-style-type: none"> <li>Pune drafted Hawker policy</li> <li>Street Vendors Act 2014</li> <li>Street Vendors Regulation 2016</li> <li>Support to urban street vendors Operational Guidelines 2017</li> <li>Maharashtra Shasan Path Vikreta Yojana 2017, NULM</li> <li>Maharashtra Shasan Margdarshak Suchna and Path Vikreta Niyam</li> </ul> |
| Public Sanitary Conveniences | Coverage   | Project          | PMC initiatives: <ul style="list-style-type: none"> <li>Adar Poonawala City Cleanliness Movement (e-toilets at 100 locations).</li> <li>Pune City Connect (300 public toilets)</li> <li>Public Toilet Service Level Agreement</li> <li>Mobile toilet 'Ti' for women (12 locations)</li> </ul>   |
|                              | Public Toilet Policy   | Policy           | PMC prepared public toilet policy and have taken up several programmes to improve the sanitation condition.   |
|                              | Population per sqkm.   | -                | -   |
|                              | Number of Toilet seats per sqkm.   | -                | -   |
| Citizen Engagement           | Participatory mechanism  | Project          | Envisioning exercise by administrative machinery along with ecosystem of media, NGOs and private companies covering 4 lakhs households.   |
|                              | Participatory Budgeting  | Plan             | Exclusive website by PMC to capture the budget for projects recommended by citizens.  |
|                              | Public portals for engagement and grievance redressal                                      | Project          | Citizen engagement strategies are: <ul style="list-style-type: none"> <li>PMC CARE (Citizen Assistance Response and Engagement) in 2016.</li> <li>Online Contest "Maza Swapna, Smart Pune" (2015)</li> <li>Rebooting Pune - City Digital Strategy (2018)</li> </ul>   |
|                              | Digitally driven initiatives   | Project          | <ul style="list-style-type: none"> <li>Digital channels (websites, Toll-free number, SMS, Facebook, Twitter, WhatsApp, E-mail, Mobile applications to receive information, services, and register complaints)</li> <li>PMC CARE 2.0 (advanced version)</li> </ul>   |
| Integrated Land Use          | Population Density   | -                | Population per hectare  |
|                              | Land use policy to encourage development of decentralized Central Business District (CBDs) | Plan             | City Development Plan 2041<br>Comprehensive Mobility Plan, 2008<br>Smart city master plan Pilot area ABB  |

| Present Status   | Over the Years   | Application | Risk (Low/Moderate/High) |
|--|--|-------------|--------------------------|
| The PMC website highlights 4 options for implementation  | -  | Pan city    | -                        |
| Hawker policy under implementation (PMC)   | -  | Pan city    | -                        |
| 3,006 toilet seats based on public toilet gap analysis report  | 28% increase in no. of toilet seats (2016-18, PMC)                 | Pan city    | Low                      |
| 1,385 toilet seats also constructed in partnership with Shelter Association.   |  |             |                          |
| Samagra toilet monitoring unit with dashboard on Comparative performance of toilets by location, toilet operator, complaint hotspots   |  |             |                          |
| Policy under implementation (PMC)  | -  | Pan city    | -                        |
| 7,015  | -  | Pan city    | -                        |
| 6 toilet seats per sqkm.   | -  | Pan city    | -                        |
| Door-to-door campaign covering 15 wards by 1.5 lakh smart city volunteers (35 lakh inputs received from the citizens-largest envisioning exercise, 2016)                           | -  | Pan city    | -                        |
| Suggestions received from citizens in Aug-Sep 2022   | -  | Pan city    | -                        |
| 24x7 war room with 5 cells: Campaign Management, Response Management, Analytics, Creative Management and Documentation management.   | -  | Pan city    | -                        |
| -  | -  | Pan city    | -                        |
| 92 pph   | -  | Pan city    | -                        |
| Areas including Camp (MG Road, East Road), Swargate, Laxmi Road (Tilak Road, Bajirao Road), Kalyani Nagar, Shivajinagar, Wakad Wadi, Deccan, FC Road, JM Road, and Ahmednagar Road | 38,640 commercial establishments generated 2,31,973 jobs till 2023 | Pan city    | -                        |
| Chakan MIDC is developing as an extension to PCMC MIDC   |  |             |                          |
| 1800 ha SEZ proposed in the North of PMC   | Start up zone in ABB will generate 45,000 jobs by 2030             |             |                          |
| Model neighborhood at Aundh-Baner-Balewadi (ABB) proposed to house 1.6 lakhs population by 2030 encouraging mixed use and walk-to-work (PSCDCL)                                    |  |             |                          |

\* The indicators are assessed based on documentation from PMC in 2022





| 24 Indicators  | Sub-Indicators   | Action Initiated | Description  |
|--|--|------------------|--|
|  | Transit Oriented Development (TOD) policy                                      | Policy           | Existing and future developments well connected with PMC through old and new NH-4 and Mumbai- Pune expressway through city roads such as Pashan Road, Sus Road (SH-57), Baner Road, Karve Road and Sinhagad Road<br><br>Proposed Multi-Modal Transit Hub and Start-Up zone.<br><br>500-metre TOD zone along the proposed metro routes. Maximum permissible FSI 4 (2020).   |
| <b>Green Built Environment</b>                       | Policy to encourage green building adoption for all new and existing buildings | Policy           | PWD Maharashtra mandated the renovation of existing buildings and construction of all new government buildings as per Green Building Norms (2016)<br><br>PMC and PMRDA offers an additional FAR of 3%, 5% and 7% for Green Buildings (since 2017)<br><br>Urban Development Department Maharashtra offers an additional FAR of 3%, 5% and 7% for Green Buildings (2020)<br><br>UDCPR Maharashtra proposed incentive for Green Integrated Townships meeting green norms (2022) |
|  | Green Building footprint of city   | -                | Green building footprint statistics (including the registered and certified projects with certification body) in consultation with National Green Building Council.  |
|  | Green Building Cell  | -                | -  |
| <b>Enhance Pedestrian Pathways on Public Streets</b> | Percentage of area under transport infrastructure in land use plan             | -                | Development Plan (PMC)   |
|  | Sustainable Urban Transport Policies   | Policy & Plan    | <ul style="list-style-type: none"> <li>Comprehensive Mobility Plan (CMP) 2008</li> <li>Walk Smart Pedestrian Policy 2016 (PMC)</li> <li>Public Parking Policy 2016 (PMC)</li> <li>Comprehensive Bicycle Plan 2017 (PMC)</li> </ul>   |
|  | Sustainable Urban Street Guidelines  | Plan & Project   | <ul style="list-style-type: none"> <li>Urban Street Design Guidelines (USDG) 2016</li> <li>Pune Street Programme (PSP) 2017</li> <li>Urban Cycling Design Guidelines (UCDG) 2017</li> <li>Public Bicycle Sharing (PBS) 2018</li> <li>Urban 95 programme 2020</li> </ul>  |
|  | Percentage of footpath km out of road network length (km)                      | -                | 53% of total road length (1950 km): 2010<br>43% of total road length (1400 km): 2020   |
|  | Percentage of walking & cycling trips (NMT) of total trips (all modes)         | -                | -  |

\* The indicators are assessed based on documentation from PMC in 2022

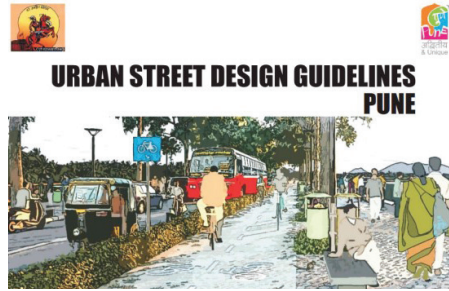
| Present Status  | Over the Years  | Application | Risk (Low/Moderate/High) |
|---|---|-------------|--------------------------|
| Future expansion planned in West, North West, and North of PMC (residential growth in Baner, Balewadi, Sutarwadi, Pashan, and Aundh) Spill over of developments into PCMC area (around Waked). CBD expansion is expected in and around city roads leading to old and new NH4 and expressway.<br><br>Planned integration of Metro station, Bus Terminal with retail and office spaces.<br><br>83 proposals sanctioned under the TOD zone | High-density mixed land use development in the influence zone (500m) of transit stations since 2020 | Pan city    | -                        |
| Notification from the local authority highlighting the favourable green building policy/ incentive mechanism for encouraging green projects in the city   | -   | Pan city    | -                        |
| Green rated projects in Pune city (IGBC records) :<br>111 certified till 2021<br>173 certified till 2022.   | 17 Million sq.ft added to Pune's green footprint in two years (2021 & 2022)                         | Pan city    | -                        |
| -   | -   | -           | -                        |
| 13%   | -   | -           | -                        |
| Pune envisioned increasing the modal share of NMT and public transport from 53% since 2008 (PMC)<br><br>50% of the transport budget allocated to sustainable transport since 2016 (ITDP)  | Proposed modal share of NMT and public transport to achieve 90% by 2031                             | Pan city    | -                        |
| 100km of streets as part of Pune Streets Programme (PSP)<br><br>Creation of 400 kms of cycling friendly streets, targeting 25% of the total road network.   | Demonstrated equitable allocation of street space   | Pan city    | -                        |
| 503 km footpath on atleast one side (CMP 2008)<br>607 km footpath on both sides (MoHUA 2020)  | 20% increase in footpath (104 km) since 2010 (PMC)  | Pan city    | -                        |
| 35% (CMP 2008): Significant % are slum dwellers<br>28% (ESR 2022): Significant % are students   | Proposed modal share of NMT to achieve 50% by 2031  | Pan city    | -                        |



| 24 Indicators                            | Sub-Indicators  | Action Initiated | Description   |
|--|---|------------------|---|
|  | Percentage of cycle track km out of road network length (km)    | -                | 9% of total road length (950 km): 2008<br>28% of total road length (1400 km): 2017  |
|  | Bicycle density per km  | -                | -   |
|  | Congestion Reduction Policies                                   | Policy           | Differential parking system which entails higher fees in central business district and specific zones in city. Parking charges shall increase every hour by 100% during peak hours. Differential parking charges for weekends   |
| <b>Encourage use of Public Transport</b> | Percentage of Public Transport trips of total trips (all modes) | -                | -   |
|  | Public Transport Availability                                   | Project          | 3 major modes of public transport in Pune- Bus, Railway and Metro. <ul style="list-style-type: none"> <li>• Buses are upgraded after formation of PMPML (2007)-1,658 CNG buses &amp; 287 diesel buses</li> <li>• Rainbow BRT (2015)</li> <li>• 310 EV Buses &amp; Depot (2019)</li> <li>• 23 km operational Pune Metro Network (2022)</li> <li>• 75km DEMU Railway Network</li> </ul> |
|  | Multiple Nodal bus stations availability                        | Project          | 2 major Intercity Bus Terminals – Swargate and Pune Junction. 10 major Bus Depots, 5 major Bus stands and 324 Routes, thus facilitating intra-city commuting.   |
|  | Percentage of fleet with low emitting vehicles                  | -                | -   |
|  | Public Transport Accessibility                                  | -                | -   |
|  | First and Last mile connectivity                                | Project          | <ul style="list-style-type: none"> <li>• 'Das Me Bus' PMPML Punyadasham bus service travelling along 9 routes @ INR 10</li> <li>• Raatrani Night Bus Service for commuters to railway station (2019)</li> <li>• ABHI (Airport Bus for Business Home and Hotel Interconnectivity) Bus Service (2020)</li> </ul>  |
|  | User centric design of bus stops                                | Project          | PMPML Design Studio collaborated with StudioSarg to design user centric touchpoints of the Bus transport (2019)   |

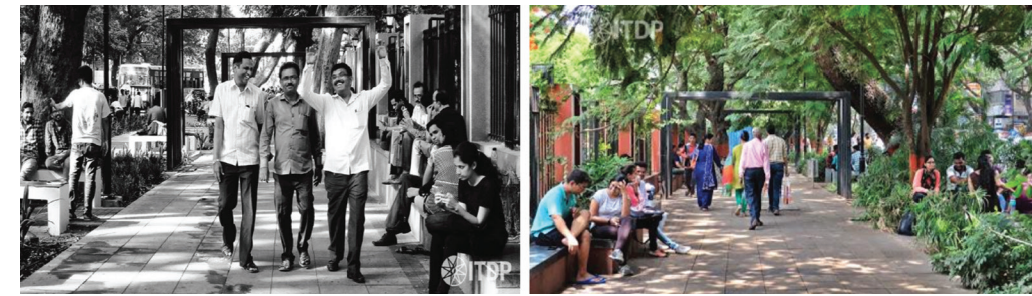
| Present Status   | Over the Years   | Application | Risk (Low/Moderate/High) |
|--|--|-------------|--------------------------|
| Master Plan of Pune BRT and Pune Metro have a dedicated cycle network (2-2.5m width) and Cycle Master Plan Layout. PBS system planned for ABB area with 1,250 cycles & 100 cycle stations.   | Pune is known for its use of bicycles (1970-80)<br><br>75% of the road network planned for cycle tracks (USDG)           | Pan city    | -                        |
| 451 bicycles per sqkm. with bicycle stations within 300m radius (PMC)  | -  | Pan city    | -                        |
| -  | -  | Pan city    | Moderate                 |
| 18% of total trips: 2008<br>27% of total trips: 2022   | 49% increase in Public Transport since 2008 (PMC)<br><br>Proposed modal share of Public Transport to achieve 40% by 2031 | Pan city    | -                        |
| PMPML has 13 functioning depots, 50 terminals at important nodes of the city and over 3000 bus stops. Public Transport available in 315 routes (1,900kms road network) catering to around 10.5 lakh passengers/ day.<br><br>1,856 buses, no metro and 10 local trains daily (2010)<br><br>2,255 buses (including mini, e-buses, BRT compliant buses), 6 km metro network, 22 trains daily (2023) | 54% increase in fleet of buses since 2010 (PMC)  | Pan city    | -                        |
| 74% passengers have waiting time of less than 10 minutes in Swargate terminal and 90% passengers have waiting time of less than 10 minutes in Pune junction terminal. (CMP)  | -  | Pan city    | -                        |
| PMC has a total bus fleet of 2,255 buses (which include 287 diesel buses, 1,658 CNG buses and 310 e-buses) serving approximately 46,65,312 people daily.   | 90% of the fleet are low-emitting vehicles   | Pan city    | -                        |
| 96% of residents live within a 500m walkable distance of a bus network (ITDP)  | -  | Pan city    | -                        |
| 200 routes (2008)  | -  | Pan city    | -                        |
| Connect every nook and corner of the city. Oct 2021 dashboard highlights 1,345 registered daily passes, 19,169 trips, a ridership of 686,417 and 1,477 buses on road and 100% grievances resolved and closed on a particular day   | -  | Pan city    | -                        |
| Pune has sheltered bus stops with adequate seating capacity, illumination, information displays on network route map and interchanges at each of the bus stops.  | -  | Pan city    | -                        |

\* The indicators are assessed based on documentation from PMC in 2022



| 24 Indicators                  | Sub-Indicators  | Action Initiated | Description   |
|--------------------------------|---|------------------|---|
|                                | Facilities catering to differently abled/senior citizens                                  | Plan & Project   | -   |
|                                | Safety and Surveillance   | Project          | -   |
|                                | Restrooms at every alternate bus stop and metro stations                                  | Project          | -   |
|                                | App for bus based transit system/ rail based transit system                               | Project          | -   |
| <b>Smart Parking Programme</b> | Policy to encourage adequate parking in buildings   | Policy           | Dedicated parking space requirements for visitors and buses/ vans/ ambulances in the residential, institutional, educational, assembly, Government or Semi public or private, Mercantile, Industrial and Storage buildings. (DTP Maharashtra)   |
|                                | Policy to encourage public Multi Level Car Parking (MLCPs)                                | Policy           | PMC planned to subdivide the city into multiple parking districts. Complemented by limited, time-slotted on-street parking and higher rates.  |
|                                | Parking Policy  | Policy           | Public Parking Policy 2016 (PMC) for encouraging use of alternative modes of transport and reduce motor vehicle use, for accommodating new traffic management concepts in response to traffic problems and for appropriate use of land.   |
|                                | Parking Pricing mechanism   | Policy           | Parking charges shall be based on Base parking rate based on vehicle size and the amount of space it occupies (ECS of vehicle).<br><br>Based on real time data analysis:<br><ul style="list-style-type: none"> <li>Differential parking for different zones, weekdays and weekends</li> <li>Dynamic pricing based on demand</li> <li>Discounted night parking</li> <li>Higher on-street parking fees than off-street parking</li> </ul> |
|                                | Policy to mandate dedicated parking spaces for bus/van/ ambulance within project premise. | Policy           | DTP Maharashtra Notification mandate for every 3 class rooms: 2 & 1 bus parking is required in non-congested & congested area respectively.<br><br>For Hospitals: 3 cars, 12 scooters and 10 cycles for every 10 beds.  |

\* The indicators are assessed based on documentation from PMC in 2022



| Present Status  | Over the Years | Application | Risk (Low/Moderate/High) |
|---|----------------|-------------|--------------------------|
| <ul style="list-style-type: none"> <li>Free bus pass scheme for differently abled citizens.</li> <li>Reserved seats for Differently abled people and senior citizens in all buses.</li> <li>BRT bus stops designed with tactile anti-skid flooring, uniform boarding.</li> </ul>  | -              | Pan city    | Low                      |
| <ul style="list-style-type: none"> <li>Intelligent Transit Management System (ITMS) for real-time bus tracking</li> <li>Automated Fare Collection System (AFCS)</li> <li>Tejaswini Bus Service for women (2018)</li> <li>Emergency call boxes commissioned at 129 locations (2018) to establish a two-way audio-video communication with Police.</li> </ul> | -              | Pan city    | -                        |
| <ul style="list-style-type: none"> <li>Ti - Toilet Integration - Bus Toilet for women</li> <li>Public Toilets along BTRS corridors and all Pune metro stations</li> </ul>   | -              | Pan city    | -                        |
| PMPML Mobile based Application can be useful for Vehicle Tracking, Grievance Management, E-Ticketing, m-Ticketing and Commuter Facilities   | -              | -           | -                        |
| UTS Railway App   | -              | Pan city    | Low                      |
| Parking zones in the city includes: Zone A -Congested Area, Zone B-Mobility Corridors and Zone C – Area excluding A & B zones.  | -              | Pan city    | -                        |
| Large parking spaces at Baner Bus Depot, Hutatma babugenu MLCP Mandai, Dagdusheth MLCP, FC Road Parking, Tukaram Shinde MLCP, PMC parking, Pune airport MLCP, Infosys MLCP  | -              | Pan city    | -                        |
| Pune city is likely to need 4.5 lakhs parking spaces every year with business-as-usual scenario.  | -              | Pan city    | -                        |
| The policy helped reducing traffic congestion, accidents, pollution and dependency on personal modes of transportation.   | -              | Pan city    | -                        |
|   | -              | Pan city    | Low                      |



| 24 Indicators                     | Sub-Indicators   | Action Initiated | Description   |
|-----------------------------------|--|------------------|---|
|                                   | App based Parking  | Project          | ParIn App enables citizens to get safe and secure parking spaces in Pune city, without any tickets, rush and hassle, a cashless booking experience.   |
| <b>Ambient Air Monitoring</b>     | Real time monitoring of air quality parameters   | Project          | <ul style="list-style-type: none"> <li>• Nitrogen Dioxide: Lower Benchmark of 40 ug/m3 (PCB)</li> <li>• Sulphur Dioxide: Lower Benchmark of 50 ug/m3 (PCB)</li> <li>• Particulate matter: (PM2.5 &amp; PM10): Lower Benchmark of 40 ug/m3 &amp; 60 ug/m3 respectively (PCB)</li> </ul>  |
|                                   | Air Quality Index (AQI) monitoring stations  | -                | -   |
|                                   | Air Pollution mobile app   | -                | Under AR - Pune (System of Air Quality & Weather Forecasting and Research programme, the country's first air pollution mobile app SAFARiAir is launched.  |
|                                   | Air quality improvement initiatives  | -                | -   |
| <b>Noise level monitoring</b>     | Noise level monitoring periodically  | Project          | -   |
| <b>Rainwater Harvesting (RWH)</b> | Increase in ground water table   | -                | -   |
|                                   | Policy mandate on rainwater harvesting for all projects (or) incentive program to encourage rainwater harvesting | Policy           | <p>Policy mandate all new construction/ reconstruction/ additions on plots having area not less than 500 sq.m. The authority may impose a levy of not exceeding INR. 1000/- per annum for every 100sq.m. of built-up area for the failure of the owner in maintaining the system (UDCPR 2020)</p> <p>Policy for Rainwater harvesting (PMC 2002)</p> |

| Present Status   | Over the Years  | Application | Risk (Low/Moderate/High) |
|--|---|-------------|--------------------------|
| Mobile application for Pay & Park system (PMC)<br>Smart parking project in the Aundh-Baner-Balewadi (PSCDL)  | -   | Pan city    | -                        |
| 50 Environmental sensors at various locations to gather real time data of ambient air quality.<br>No day was recorded in the:<br>• Very Poor category for Air Quality Index, PM2.5.<br>• Poor and Very Poor categories for Air Quality Index PM10 (2021) | In the last 5 years, PM10 was recorded below the permissible standard.  | Area Based  | Moderate                 |
| 10 monitoring station in Pune at Pashan, Shivajinagar, Lohegaon, Alandi, Katraj, Hadapsar, Bhosari, Nigdi, Kothrud and Bhumkar Chowk and additional 8 manual stations (3 CPCB, 2 MPCB and 3 PMC)   | 1 Station in every 10km radius  | Area Based  | Moderate                 |
| SAFARiAir monitors the amount of air pollutants in the air at various places in the city.  | -   | Pan city    | -                        |
| -  | In last 7 years, the initiatives includes: Registration of BSVI vehicles, sulphur reduction in diesel, encouraging use of CNG, subsidy to 3-wheeler CNG run auto-rickshaws, more CNG stations, CNG buses for public transport, PMPML phasing out of old bus, EV Buses, BRT, cycle tracks, Metro Rail, Pune Street Program, Parking Policy, Pedestrian Policy. | Pan city    | -                        |
| Noise levels in one of the city projects are within prescribed limits (CPCB) of 55/ 45 dB for Day/ Night specified norms.  | -   | Area Based  | -                        |
| 11.75 m average depth of bore well in Pune City (2006, GSDA)<br>3.8m average depth of bore well in Pune City (2022, Groundwater Yearbook of Maharashtra)   | 7.95m increase in average ground water level (67%) compared to 2006 scenario  | Pan city    | Low                      |
| Green rated projects in Pune city (IGBC records) :<br>111 certified till 2021<br>173 certified till 2022.  | 17 Million sq.ft added to Pune's green building footprint in two years complying with RWH (2021 & 2022)   | Pan city    | Low                      |

\* The indicators are assessed based on documentation from PMC in 2022



| 24 Indicators            | Sub-Indicators  | Action Initiated | Description   |
|--------------------------|---|------------------|---|
|                          | Maps for prioritization for Artificial Recharge                         | Plan             | GSDA Maharashtra website highlighting the zones defined as High, Moderate, Low priority and Limited scope |
|                          | Storage capacity of surface water reservoirs supplying water to city    | -                | -   |
|                          | Rebate in property tax for properties meeting RWHT requirements         | Policy           | 5% reduction in tax if RWHT activities are taken up by buildings (PMC)                                    |
|                          | Initiatives to restore, rejuvenate and revive the existing water bodies | Project          | Urban Groundwater Recharge project in association with Mission Groundwater and ACWADAM. (2019)            |
| Smart Metering for Water | Water supply coverage   | -                | -   |
|                          | Potable water extraction from the surface and subsurface sources        | -                | Intake wells, infiltration wells and bore wells treated in WTP (WTPs at Khadakwasla lake managed by PMC). |
|                          | Per capita water consumption  | -                | -   |
|                          | Coverage of metered connection  | Project          | PMC invested 2.75 Crore in smart water metering   |

| Present Status  | Over the Years  | Application | Risk (Low/Moderate/High) |
|---|---|-------------|--------------------------|
| Majority of the zones are high & moderate priority, where check dams, recharge wells, underground Bundara, recharge shafts, farm pond, percolation tanks are recommended.   | -   | Pan city    | -                        |
| 818 MCM   | Total annual rainfall is increasing since 2015, but the average live water storage capacity shows a decreasing trend post 2017. Mismanagement of rainwater could be a possible cause. (Water Sustainability Report, study period 2015-2020) | Pan city    | -                        |
| Properties had done rainwater harvesting to get tax benefits: 20,957 in 2020-21<br>18,500 in 2021-22.   | -   | Pan city    | -                        |
| Depth to Water Level of all ground water monitoring wells of City at 3.8 m (2022)   | Increase of 7.95 m in ground water level (67%) compared to 2006 scenario  | Pan city    | Low                      |
| Total: 14.44 TMC (State Government Irrigation Department, 2020)<br><br>Domestic: 13.16 TMC (10.22 TMC at Khadakwasla, 2.64 TMC at Bhama Askhed and 0.30 TMC at Pavana)<br><br>Industrial: 1.28 TMC  | 99% water supply coverage. Less than 1% using water supply through tankers (approx. 40,000 out of 55.27 lakhs population, 2022)   | Pan city    | -                        |
| 10 WTP are Parvati WTP, Wadgaon Old, Wadgaon New, Warje Old, Warje New, Holkar Old, Holkar New, Ravet Chikhali at PMC area and Lashkar Old & Lashkar New in Pune Cantonment area. Water treated is supplied for different end uses for domestic, industrial and irrigation purposes | -   | Area Based  | -                        |
| 200 LPCD (Litre Per Capita per Day)   | Drop in average usage of water from 250 LPCD to 185 LPCD, but still higher than CPHEEO benchmark of 135 LPCD (2022, pilot study)  | Pan city    | -                        |
| 29.71% Coverage of metered connection (2010,PMC)<br><br>94.2% Coverage of metered connection (2023,PMC). 9.37 Lakhs out of 10.02 Lakhs water supply connections are metered rest are without meters/tankers   | 3 fold increase in coverage to meet the service level benchmark (SLB) indicators of 100% (since 2010)   | Pan city    | -                        |

\* The indicators are assessed based on documentation from PMC in 2022



| 24 Indicators                    | Sub-Indicators   | Action Initiated | Description  |
|----------------------------------|--|------------------|--|
|                                  | Percentage of Non Revenue Water  | -                | Planned actions to reduce NRW included installation of metering devices for all the connections, setting of efficient reading method for water consumption volumes, adoption of adequate water tariff according to the ability to pay of various categories of users, regularization of illegal connections, and correct classification of commercial connections (DPR, 2014)<br><br>Active Leakage Control system |
|                                  | Establishment of District Metering Areas (DMAs)                        | Project          | Water audit carried out in all the DMAs of a water distribution area allows prioritizing the leakage detection.  |
|                                  | Treated Water Monitoring   | Project          | SCADA system for monitoring  |
| <b>Use of Treated Wastewater</b> | Percentage of connected sewerage                                       | -                | -  |
|                                  | Increase in capacity of wastewater treatment                           | -                | Sewerage system consisting of collection network, conveyance lines, pumping stations and STPs.<br><br>Six intermediate pump stations (IPS) & Nine existing STPs.   |
|                                  | Policy to encourage waste water treatment & reuse across the buildings | Policy           | UDCPR Maharashtra mandate grey water recycling and reuse in all building projects  |

| Present Status  | Over the Years  | Application | Risk (Low/Moderate/High) |
|---|---|-------------|--------------------------|
| Water tax collected:<br>56% in 2013-14.<br>68% in 2019-20   | NRW has come down from 44% in 2013 to 32% in 2019-20. PMC has issued a directive under the head NRW Reduction and Management Service. Planned strategies and actions to reduce NRW to 15% in a phased manner.<br><br>Active Leakage Control programme to reduce losses in a gradual (30% by 2017, 20% by 2022 and 15% by 2027-2047) | Pan city    | -                        |
| Non-Rvenue Water within the DMA can be achieved.  | -   | Pan city    | -                        |
| Meters installed at Naidu STP, Erandwana 50 MLD STP, Vitthalwadi 32 MLD STP, Baner 32 MLD STP, showing the realtime readings on Flow rate, pH, BOD, COD, TSS, Temperature   | -   | Pan city    | Low                      |
| Pune City covered with 92% of sewerage network of 2,200 Kms.  | -   | Pan city    | -                        |
| Existing capacity of STPs (567 MLD): 130 MLD Bhairoba, 50MLD Erandwane, 17 MLD Tanajiwadi, 18 MLD Bopodi, 90 MLD Naidu Hospital, 32 MLD Vitthalwadi and 115 MLD New Naidu Hospital STP.   | 2 fold increase in waste water treatment capacity (since 2010)  | Pan city    | -                        |
| Planned capacity of STPs (501 MLD): 30 MLD at Baner, 45 MLD at Mundhawa, 40 MLD at Kharadi  |   |             |                          |
| Waste water treatment capacity:<br>292 MLD in 2010<br>672 MLD in 2022   |   |             |                          |
| Applicable to:<br>• Residential layouts: 10000 sq.m. or more<br>• Group housing: 100 or more tenements<br>• Educational, Industrial, Commercial, Government, Semi-Government organizations, Hotels and Lodgings: 1500 sq.m. or more or having water consumption of 20,000 litres/ day (UDCPR Maharashtra, 2022) | 17 Million sq.ft added to Pune's green building footprint in two years complying with Waste Water Treatment (2021 & 2022)   | Pan city    | -                        |
| 5% rebate on property tax for waste water treatment & recycling (PMC)   |   |             |                          |
| Green rated projects in Pune city (IGBC records) :<br>111 certified till 2021<br>173 certified till 2022.   |   |             |                          |

\* The indicators are assessed based on documentation from PMC in 2022



| 24 Indicators          | Sub-Indicators                             | Action Initiated | Description   |
|------------------------|--|------------------|---|
|                        | Increase in reuse of treated wastewater    | -                | Treated waste water used for: <ul style="list-style-type: none"> <li>• Irrigation (99%)</li> <li>• Other applications like construction, road cleaning etc. (1%)</li> </ul>   |
| Solid Waste Management | Municipal waste generation                 | -                | -   |
|                        | Percentage of waste collected              | Plan             | 1500 waste pickers as service providers for door to door collection SWaCH (Solid Waste Collection and Handling, 2007)<br>PMC & SWaCH agreement for decentralized waste collection services for households, shops, offices and small commercial establishments (2016)<br>Rapid action plan to achieve the target of 100 waste collection (2019, PMC) |
|                        | Treatment and Recycling of waste collected | Project          | 275 TPD waste to compost plants<br>200 TPD recyclables including E-Waste are diverted to State authorised recyclers by PMC<br>750 TPD Waste to Energy Plant.  |

| Present Status  | Over the Years   | Application | Risk (Low/Moderate/High) |
|---|--|-------------|--------------------------|
| 55% waste water is treated (remaining 45% is released untreated into the rivers) and zero percent reused (2010, PMC)<br>70% waste water is treated and 93% is reused. 500 MLD reused out of 535 MLD treated water (2022, PMC)<br>2100 MT waste per day: 900 MT Wet waste and 1200 MT Dry waste (2022, PMC)<br>100%  | More than 90% increase in reuse of treated wastewater generated in the city since 2010   | Pan city    | -                        |
| Wet waste is split into 4 sections:<br>450-460 MT/day composting plant and biogas project (PMC)<br>125 MT/day handled (bulk waste generator process)<br>75 MT/day handled (home composting)<br>250 MT/day handled through composting (farmers)<br>Dry waste is split into 4 sections:<br>1100 MT/day Dry waste (other than plastic)<br>92 MT/day plastic waste<br>5 MT/day biomedical waste (CPCB norms)<br>8 MT/day sanitary waste | 900-915 MT/day Wet Waste is processed and diverted from landfill. 1200 MT/day Dry Waste is processed and diverted from landfill. 70,000 MT of recycled waste diverted annually and 100 crores saved to PMC by SWaCH (2021)<br>SWaCH team manage waste at events including marathons, conferences, onetime event, melas and street event (public gathering/ fair). SWaCH, ITC and PMC collects and recycle MLP waste. 'Nirmalaya' project enables devotees to recycle votive offerings.<br>Proposed 1200 MT/ day capacity new garbage treatment plants<br>• 350 MT/day Waste to Energy plant (Ramtekdi)<br>• 200 MT/day PMC Wet waste project (Waste Transfer Center)<br>• 150 MT/day capacity handled by Direct Disposal of dry waste from waste transfer center of PMC to Dalmiya cement company<br>• 100 MT/day RDF from Dry waste – a project under Pune Katak Mandal<br>• 400 MT/day waste through MRF (Waste to Energy plant) | Pan city    | Low                      |

\* The indicators are assessed based on documentation from PMC in 2022

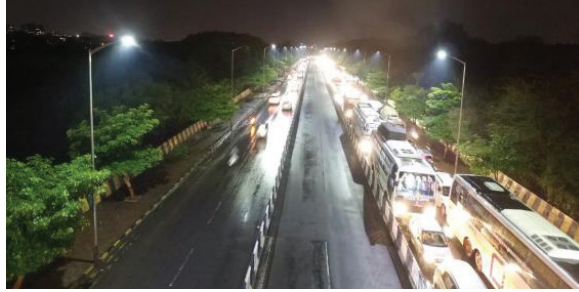


| 24 Indicators | Sub-Indicators                                     | Action Initiated | Description   |
|---------------|--|------------------|---|
|               | Scientific disposal of landfill waste              | -                | Devachi Uruli Garbage Depot: 163 acres. <ul style="list-style-type: none"> <li>Actual waste:93 acres</li> <li>Trees, roads, buffer zone: 12 acres</li> <li>Garbage project sheds, Parking shed: 45 acres</li> <li>Reserved for upcoming projects:7 Acres</li> </ul>   |
|               | Biomedical waste management                        | -                | Guidelines for "Handling of BMW for utilization" (2021, MPCB Circular)  |
|               | E-Waste management                                 | -                | Zero landfilling of e-waste through increased reduction, segregation, reuse, efficient collection, safe handling, monitoring and channelization to authorised collection centres, dismantlers or recyclers (Public Health & Sanitation Bye-laws 2017, PMC)  |
|               | Construction and Demolition Waste (C&D) management | -                | C&D Waste management rules and guidelines to be followed by Generators and Corporation. All C&D waste disposed at a designated disposal site shall be subject to a tipping fee to be recovered from the generator of C&D waste (Public Health & Sanitation Bye-laws 2017)   |
|               | Handling and disposal of hazardous waste (HW)      | -                | -   |
|               | Integrated Solid Waste management                  | Project          | PMC and International Environmental Technology Centre (IETC) of United Nations Environment Programme (UNEP) in Japan signed a Framework for developing an ISWM Action Plan including Municipal Solid Waste (MSW), Plastic Waste, Biomedical Waste (BMW), Hazardous Waste, Electronic Waste (E-Waste) and Construction and Demolition Waste (C&D Waste), emphasizing on Reduction, Reuse and Recycle (3R) principle across the Life Cycle of waste streams. (2006) |

| Present Status  | Over the Years   | Application | Risk (Low/Moderate/High) |
|---|--|-------------|--------------------------|
| -   | 26 lakh MT waste capping with soil (2003-14)<br>5 lakh MT waste managed using HDPE Liner in capping, 5 lakh MT waste covered by MNP, 9 lakh MT waste initiated for remediation by the process of biomining (2014-18)<br>9.2 lakh MT of waste treated and around 16 acres of land reclaimed (2018-23)<br>93 acres of land having 50.5 lakh MT waste is under phased development | Pan city    | -                        |
| PMC has outsourced collection, transportation and disposal of BMW: 7 vehicles collect biomedical waste from 400 collection points in 3 colour coded bags: yellow (incineration), red (shredding, recycling, landfill), white (chemically treated sharp and glass material which sent to hazardous treatment plant at Ranjangaon). | 20 MT/day of household sanitary waste was handled by Swachh waste-pickers<br>1.8 MT/day from health care facilities are diverted for treatment and disposal of BMW to Common Bio-medical Waste Treatment Facility (CBWTF)  | Pan city    | -                        |
| SWaCH and its MPCB authorized e-Waste recycler and dismantler PRO partner enables organizations to meet regulatory requirements for the safe disposal of IT e-waste, ensuring that it is recycled responsibly,  | City is working towards 'Zero E-Waste' (since 2016)  | Pan city    | -                        |
| PMC generates 200MT C&D waste/day   | C&D Waste Management will enable proper handling and disposal  | Pan city    | -                        |
| 1,311 industry in Pune District.<br><br>Total Hazardous Waste generation: 66,3371.77 MT/Year. <ul style="list-style-type: none"> <li>Incineration: 79,573.92MT</li> <li>Land filling: 87,808.28 MT</li> <li>Recovery /utilization of HW material: 495989.57MT (District Environment Report of Pune 2021)</li> </ul>               | 100% source segregation and utilization  | Pan city    | -                        |
| PMC currently employs 10,000 people (including 3,000 contract employees) for SWM<br><br>650 vehicle fleet includes Ghantagadis, Bulk Refuse Carriers, Chhota Haathi, Hotel Trucks and Garden Trucks to collect waste from multiple points across the city managed by the SWM department.  | -  | Pan city    | -                        |

\* The indicators are assessed based on documentation from PMC in 2022





| 24 Indicators              | Sub-Indicators                                   | Action Initiated | Description  |
|----------------------------|--|------------------|--|
|                            | Innovative Solid Waste Management projects       | Project          | -  |
|                            | Percentage of waste processed                    | -                | -  |
| <b>Lighting Efficiency</b> | Reduction in lighting load                       | Project          | 45W LED light replaced 70W HPSV & 4 x14W T5 (126W) existing street lights.<br>100W and 180W LED lights replaced 150W and 250W HPSV.  |
|                            | LED lighting for street and traffic applications | Project          | Energy efficient dimmable LED street lighting project along with Feeder basis SCADA system (2016)<br>1,67,624 LED lights installed in streetlights (2022, Pune Smart City) |
|                            | Lighting controls                                | -                | <ul style="list-style-type: none"> <li>On / off automatic controls for streetlights.</li> <li>Public parks and landscape areas</li> </ul>                                  |

\* The indicators are assessed based on documentation from PMC in 2022

| Present Status  | Over the Years  | Application | Risk (Low/Moderate/High) |
|---|---|-------------|--------------------------|
| <ul style="list-style-type: none"> <li>200 MT Bio CNG Project : 'City Waste to City Bus' .</li> <li>700 MTPD Waste to Energy Pune Bio Energy Plant (13MW)</li> <li>4 Mithras Plants of 50 MTPD capacity each</li> <li>350 MTPD Waste to Energy Ramtekdi, Hadapsar</li> <li>5 JATAYU- vacuum based Waste Suction Machine for Chronic Spots</li> <li>15 Mechanical Street Sweeping Machines.</li> <li>E-Waste App in partnership with APCCI</li> <li>Plogathon initiative (1.5 lakh PuneKars) collected 80,000 kg of garbage</li> </ul> | -   | -           | -                        |
| 100%  | Waste Management & Recycling initiatives contributed to a direct increase in income for waste pickers and emissions reduction of over 1,030 Tonnes of CO2 Equivalent  | Pan city    | -                        |
| Lighting load before LED installation: 15,052.86 kW<br>Lighting load after LED replacement:6,752.63 kW  | 55% reduction in lighting load with monthly energy savings of 29.88 lakhs kWh (monetary savings of 1.73 crores/ month.)<br>23,181 tonnes/year reduction in carbon emissions by LED replacement  | Pan city    | -                        |
| Total Street lights: 10,15,382<br>• 1,80,000 (17.7%) LED lights. Energy savings more than 50%.  | Upgraded 70,000 existing conventional street light to energy efficient LED light, achieved higher illumination and better quality of white light, maintained high power factor > 0.98 and energy savings of 30-50% since 2010<br>LED lamps resulting in 50% savings in MSEDCL bill (PMC)  | Pan city    | -                        |
| 1000 Feeders and Feeder based SCADA system on existing LED Street lights  | Smart light controls planned to address centralized monitoring and control, on-off synchronizing, dimming, load voltage regulation, instant fault detection with configurable sms / email alerts, dimming of each type of existing lamps / luminaires possible without necessity of changing the existing ballast and web interface for remote control (PSCDL ICCS Dashboard) | Pan city    | -                        |



| 24 Indicators                                   | Sub-Indicators   | Action Initiated | Description  |
|---|--|------------------|--|
| Use of Renewable energy for Built Environment   | Policy to encourage/ mandate 100% LED lighting for signages & hoardings                    | Policy           | Urban Development Department, Govt. of Maharashtra (2022) defines the Advertisement in cities  |
|   | Solar powered lighting load out of total lighting load                                     | -                | -  |
|   | Renewable energy supply to total energy supply   | -                | -  |
| Solar Water Heating Systems                     | Solar Power Projects   | Project          | Pune MNP solar power projects (PV installation): 443 kW in RESCO model and 825 kWp in CAPEX model. (ESR 2021-22)   |
|   | Y-o-Y increase in consumers and solar PV generations                                       | -                | -  |
|   | Policy to encourage mandate / incentivize buildings to install solar water heating systems | Policy           | 5% rebate on property tax when Solar Energy activities are taken up by buildings. Interest subsidy besides property tax rebate to incentivize solar water heating systems for buildings. (PMC)<br>UDCPR Maharashtra mandated solar water heating systems for all typologies of buildings to be constructed on plot area more than 4000sq. m.(2022) |
| Solar Photovoltaic System                       | Increase in consumers of solar water heating systems                                       | -                | -  |
|   | Policy to encourage mandate / incentivize buildings to install solar rooftop systems       | Policy           | 5% rebate on property tax when Solar Energy activities are taken up by buildings. Interest subsidy besides property tax rebate to incentivize solar rooftop systems for buildings. (PMC)<br>UDCPR Maharashtra mandated roof top solar PV for all typologies of buildings to be constructed on plot area more than 4000sq.m.(2022)                  |
|   | Rooftop Solar PV Projects  | Project          | Implementation of Grid Connected Rooftop Solar PV System on the Roofs of PMC Buildings   |
| Information and Communications Technology (ICT) | City Central Command Centre  | -                | PMC intends to use the state of art City Command Control Center by integrating its core systems to manage its operations effectively through standard operating procedures.  |

| Present Status   | Over the Years  | Application | Risk (Low/Moderate/High) |
|--|---|-------------|--------------------------|
| Draft policy states "All the hoardings and signages installed must be illuminated using LED lighting fixtures. The average luminous efficacy of LED luminaires should range from 50 – 70lm/W"  | -   | Pan city    | -                        |
| -  | -   | -           | -                        |
| Total energy supply: 13,98,345.6 MWh/ year<br>RE generation: 1,62,042.14 MWh/ year (PMC ESR 2021-22)   | 11.58% of the total energy supply is from Renewable Energy  | Pan city    | -                        |
| RESCO model: 196 kWp solar PV installation in 4 buildings<br>Balagandhrava Rangmandir, Ghole Road Art gallery, Naidu Hospital, kamala Nehru Hospital<br>Other rooftop solar PV installation:<br>Democratic Annabhau Cultural Building, Mahatma Phule Auditorium, Mountain Water Treatment Plant, Pune MC Building, Savarkar bhavan (ESR 2018-19) | -   | Pan city    | -                        |
| MSEDCL Pune City Solar Power generation:<br>2019-20: 12.17 Cr. kWh (2,700consumers)<br>2020-21: 16.20 Cr. kWh (3,211consumers)   | 33% increase in solar PV generation Y-o-Y<br>19% increase in consumers Y-o-Y in implementing solar rooftop  | Pan city    | -                        |
| Policy implemented (PMC)   | -   | Pan city    | -                        |
| Policy under implementation (UDCPR)  | -   | -           | -                        |
| PMC records of solar water heating systems:<br>2015-16: 21,731 properties<br>2021-22: 58,288 properties  | Households using solar water heating units have almost doubled in 5 years.  | Pan city    | -                        |
| Policy implemented (PMC)   | -   | Pan city    | -                        |
| Policy under implementation (UDCPR)  | -   | -           | -                        |
| 38 government buildings installed with Solar PV System in PMC area (installed capacity: 1.22 MWp.)   | Annual savings of Rs. 1.29 Cr/ year   | Pan city    | -                        |
| The command-and-control layer house the action oriented SOP's, incident response dispatches and management systems (rules engines, diagnostics systems, control systems, messaging system, events handling system), and reporting / dashboard system to provide actionable information to city administrators and citizens.                      | While command-and-control layer exist in most ICCC from inception, it will be flexible to accept inputs from various downstream applications and sensors as and when they get introduced in the city. | Pan city    | -                        |

\* The indicators are assessed based on documentation from PMC in 2022



| 24 Indicators | Sub-Indicators                   | Action Initiated | Description  |
|---------------|----------------------------------|------------------|--|
|               | Smart Metering for water supply  | Project          | -  |
|               | Digital City Initiative          | Project          | Rebooting Pune - City Digital Strategy (2018)<br>200 Wi-Fi hotspots identified   |
|               | Emergency Kiosks                 | Project          | Emergency feature in mobile app to initiate a bidirectional audio – video call with operation staff at PSCDCL, PMC Smart City Operations Center  |
|               | Public Address System            | Project          | IP based announcing control connected to the Smart City Operations Center.   |
|               | Smart Traffic Management         | Project          | Solutions would provide greater information to the authorities to proactively manage the ongoing traffic situation and allow citizens to make informed travel choices  |
|               | City Surveillance Infrastructure | Project          | CCTV surveillance with real-time face recognition system and automatic number plate recognition (ANPR) system  |
|               | Smart Parking                    | Project          | Solution would enable PSCDCL and PMC to obtain real time situational awareness about the occupancy of parking lot  |
|               | Digital Experience Center        | Project          | ICT enabled centers of experience where citizens can have an immersive experience with interactive technology solutions, such as touch screen kiosks, LED screens, and audio visual experience   |
|               | m-Governance                     | Project          | Pune Connect' dedicated citizen mobile application allow citizens to log and track grievances, track services, pay and view property and water tax bills (2015)<br><br>Other mobile applications: OfficerConnect, STP Mobile App , PMC CARE app and City app store (2016)<br><br>'Pune Urban' : Mobile Application of Building Permission Department (PMC) |

\* The indicators are assessed based on documentation from PMC in 2022

| Present Status   | Over the Years                                      | Application | Risk (Low/Moderate/High) |
|--|---|-------------|--------------------------|
| 2,75,000 smart water meters to monitor, measure and manage activity across its network.  | -   | Pan city    | -                        |
| Benchmarking of Pune city against various developed cities around the globe by comparing digital capabilities in four aspects - online, mobile, social infrastructure and data   | Digital Strategy outlines set of well-defined goals | Pan city    | -                        |
| Emergency call boxes commissioned at 129 locations (2018).   | -   | Pan city    | -                        |
| 136 Public address system commissioned at intersections, public places, market places or critical locations. (2018, PSCDCL)  | -   | Pan city    | -                        |
| <ul style="list-style-type: none"> <li>Automated signal controls at 368 junctions</li> <li>Variable message display at 161 locations</li> <li>Information boards at 50 locations</li> <li>Traffic monitoring systems such as e-challan and red-light violations detection systems at 38 junctions</li> <li>Variable Message displays have been commissioned at 139 locations (2018)</li> </ul>   | -   | Pan city    | -                        |
| IOC Integrated Platform facilitates integration with external applications, include E-Challan across city, vehicle utilization for each type VTS, Street lights feeder theft, feeder health & power consumed & saved, 108 Ambulance with ambulance tracking & dashboard for optimization, ITMS-PMPML for real time tracking of all buses and route information, TOMTOM for online update to citizen on traffic time/ congestion, ITM SAFAR for initiating awareness message on AQI from ICCO and for pushing information to BRTS on low LUX levels, PMC Care for ward wise citizen complain redressal and CCTV for live feeds of video cameras across the city | -   | Pan city    | -                        |
| System can spot criminals in crowd, stolen vehicles will show up on screen at the central CCTV monitoring control room   | -   | Pan city    | -                        |
| Facilitate generation of parking receipts and tickets based on occupancy of parking lots   | -   | Pan city    | -                        |
| Provides real time location-based view to citizens about proximity of parking lots and availability of parking lots  | -   | Pan city    | -                        |
| DEC showcases flagship projects of Smart City through engaging content and games to create interest among citizens towards participatory governance  | -   | Pan city    | -                        |
| PMC collected more than 8 Cr tax through mobile app. (since 2017)  | -   | Pan city    | -                        |



| 24 Indicators | Sub-Indicators  | Action Initiated | Description   |
|---------------|---|------------------|---|
|               | City Dashboard  | -                | Various Smart City projects will lead to generation of massive operational data from different systems like Network of Smart Elements, IoT Sensors, Street Light, Water Supply, STP and Storm Water, Adaptive Traffic, Grievance Management, Solid Waste Management System on daily basis (PMC Website) |
|               | Environmental Sensors                                     | Project          | Sensors will gather data about pollution, temperature, rains, levels of gases in the city (pollution) and any other events on a daily basis for information of citizens and administration to further take appropriate actions  |
|               | Awards and Recognitions                                   | -                | -   |
|               | Community farming & Placemaking                           | Project          | Pune Smart City Corporation has received excellence award for the Community Farming project   |
|               | Green Education for Citizens to encourage Green Lifestyle | Project          | "Mazi Vasundhara", "Mazi Vasundhara 2.0" (2021-22)  |

| Present Status   | Over the Years  | Application | Risk (Low/Moderate/High) |
|--|---|-------------|--------------------------|
| City aims to use business intelligence to promote data centric decision.   | -   | Pan city    | -                        |
| Environmental sensors at 50+ locations in city and 8 information display boards, 30 flood sensors  | -   | Pan city    | Low                      |
| <ul style="list-style-type: none"> <li>• City recognise under Swachh Survekshan 2021</li> <li>• Garbage-free city award</li> <li>• Silver award for ICCC</li> <li>• Smart Cities Digital Payment Award 2018</li> <li>• Fourth Digital summit award</li> <li>• India-EU ICT Standards Collaboration Project</li> <li>• SKOCH-Platinum Award for Smart E Bus project</li> <li>• SKOCH-Silver Awards for Integrated Command and Control Center (ICCC) and SafetiPin Projects</li> </ul> | -   | -           | -                        |
| Project involves citizens at local level and conservation of environment. Project includes spaces to encourage urban farming, edible arcade, organic landscape, workshop area for group activities, community spaces, convertible spaces for citizen engagement. Users are senior citizens, kids, NGOs, senior citizen clubs, organic food vendor organizations.   | Benefits of initiative over the years: <ul style="list-style-type: none"> <li>• Efficient use of cultivable under-utilized land</li> <li>• Improving air quality at micro level reduces heat island effect efficiently</li> <li>• Nutritious food affordable and accessible to everyone</li> <li>• Rich and diversified ecosystems</li> </ul> | Pan city    | -                        |
| Program organized to create environmental awareness through PMC, Swachh Survekshan, My Earth Foundation, Maharashtra Solar Manufacturers Association (Masma), Pune District Cooperative Housing Federation and Environment Club of India under Majhi Vasundhara initiative.  | -   | Pan city    | -                        |
| City Beautification & wall paintings to encourage citizen engagement and sensitization   |   |             |                          |

\* The indicators are assessed based on documentation from PMC in 2022

**The websites, reports and dashboard referred by IGBC Green Cities Technical Team for the 'Green City' assessment based on the city level initiatives are:**

<https://vai.bmtpc.org/eq-MH.html>  
<https://vai.bmtpc.org/WIND-MH.html>  
<https://www.maharashtracivilservice.org/cdn/55c6e4a231d27.pdf>  
[www.mha.gov.in/sites/default/files/National%20Disaster%20Management%20Plan%20May%202016.pdf](http://www.mha.gov.in/sites/default/files/National%20Disaster%20Management%20Plan%20May%202016.pdf)  
[https://vai.bmtpc.org/risk\\_tables/pdf/MAHARASHTRA\\_2018%2026.pdf](https://vai.bmtpc.org/risk_tables/pdf/MAHARASHTRA_2018%2026.pdf)  
[http://saconenvi.nic.in/publication%5CNWIA\\_National\\_atlas.pdf](http://saconenvi.nic.in/publication%5CNWIA_National_atlas.pdf)  
[https://www.pmc.gov.in/informpdf/CDP/1\\_CDP\\_Intro.pdf](https://www.pmc.gov.in/informpdf/CDP/1_CDP_Intro.pdf)  
[https://www.teriin.org/sites/default/files/2018-02/2010WRO2%20Pune\\_ESR\\_2009-2010\\_English.pdf](https://www.teriin.org/sites/default/files/2018-02/2010WRO2%20Pune_ESR_2009-2010_English.pdf)  
<https://pune.gov.in/about-pune/>  
<https://www.pmc.gov.in/en/city-overview>  
[http://krishi.maharashtra.gov.in/Site/Upload/Pdf/pune\\_cdap.pdf](http://krishi.maharashtra.gov.in/Site/Upload/Pdf/pune_cdap.pdf)  
<http://cgwb.gov.in/gw-year-book-state.html>  
<https://www.pmc.gov.in/en/tree>  
<https://cpcb.nic.in/uploads/hwmd/StateWise-list-of-ContaminatedSites.pdf>  
[https://mpcb.gov.in/sites/default/files/standing\\_orders/Circular\\_Enforcement\\_Policy04102019.pdf](https://mpcb.gov.in/sites/default/files/standing_orders/Circular_Enforcement_Policy04102019.pdf)  
<https://www.pmc.gov.in/mr/pmay>  
[https://mohua.gov.in/upload/uploadfiles/files/3Maharashtra-csmc008\(1\).pdf](https://mohua.gov.in/upload/uploadfiles/files/3Maharashtra-csmc008(1).pdf)  
[https://pmay-urban.gov.in/uploads/progress-pdfs/62ea0d54bea8f-City\\_wise\\_Physical%20&%20Financial%20Progress\\_03-08-22.pdf](https://pmay-urban.gov.in/uploads/progress-pdfs/62ea0d54bea8f-City_wise_Physical%20&%20Financial%20Progress_03-08-22.pdf)  
<https://mahasdb.maharashtra.gov.in/stateReport.do?rpt=7>  
<https://pmc.gov.in/en/public-toilets>  
<https://www.pmc.gov.in/sites/default/files/project-glimpses/Public%20Toilet%20Policy%20Document.pdf>  
[http://swachhbharaturban.gov.in/writereaddata/SBM\\_GUIDELINE.pdf](http://swachhbharaturban.gov.in/writereaddata/SBM_GUIDELINE.pdf)  
[https://pmc.gov.in/informpdf/Smart\\_City/SPC\\_Part\\_1.pdf](https://pmc.gov.in/informpdf/Smart_City/SPC_Part_1.pdf)  
<https://www.maharashtra.gov.in/Site/Upload/Acts%20Rules/Marathi/Notification%20for%20Green%20Building%20Policy.pdf>  
<http://opendata.punecorporation.org/PMCRports/Pune-Smart-City-Presentation.pdf>  
[https://www.pmc.gov.in/en/pmc\\_care\\_2](https://www.pmc.gov.in/en/pmc_care_2)  
<https://www.pmc.gov.in/en/citizen-budget>

<https://www.punemetro-rail.org>  
<https://www.pmc.gov.in/en/pune-metro-rail-project>  
<https://punesmartcity.in/area-based-development-initiatives/>  
<https://propertytax.punecorporation.org/faq.aspx#>  
<https://niua.in/c-cube/content/dedicated-training>  
[https://pmc.gov.in/sites/default/files/road\\_img/USDG\\_Final\\_July2016.pdf](https://pmc.gov.in/sites/default/files/road_img/USDG_Final_July2016.pdf)  
<https://igbc.in/igbc/redirectHtml.htm?redVal=showGovtIncentivesnosign>  
<https://www.pmc.gov.in/sites/default/files/projectglimpses/Comprehensive%20Mobility%20Plan%20for%20Pune%20City.pdf>  
[https://dtp.maharashtra.gov.in/sites/default/files/Notification/UDP\\_DTP/7.UDCPR%20sanctioned...111.pdf](https://dtp.maharashtra.gov.in/sites/default/files/Notification/UDP_DTP/7.UDCPR%20sanctioned...111.pdf)  
[https://safetipin.com/wp-content/uploads/2021/10/Safetipin\\_Newsletter\\_Oct\\_2021.pdf](https://safetipin.com/wp-content/uploads/2021/10/Safetipin_Newsletter_Oct_2021.pdf)  
<https://www.pmc.gov.in/sites/default/files/miscellaneous/SEA.pdf>  
<https://gsda.maharashtra.gov.in/english/index.php/GWRRechargePriorityMap>  
<http://opendata.punecorporation.org>  
<https://rainbowbrtpune.files.wordpress.com/2017/02/pmc-brt-pop-final-report.pdf>  
<https://pmc.gov.in/sites/default/files/Ghankachara-Bye-laws.pdf>  
<https://www.pmc.gov.in/en/intelligent-street-lighting>  
[http://icrier.org/pdf/pune\\_6feb13\\_new.pdf](http://icrier.org/pdf/pune_6feb13_new.pdf)  
<http://www.mnre.gov.in>  
[https://www.teriin.org/sites/default/files/2021-06/Water\\_Sustainability\\_Assessment\\_%20of\\_Pune.pdf](https://www.teriin.org/sites/default/files/2021-06/Water_Sustainability_Assessment_%20of_Pune.pdf)  
<http://opendata.punecorporation.org/Citizen/CitizenDatasets/Index?categoryId=28>  
<https://www.pmpml.org/en/about-us/statistics/>  
[https://pmc.gov.in/informpdf/CDP/2\\_CDP\\_Physical\\_Social\\_infra.pdf](https://pmc.gov.in/informpdf/CDP/2_CDP_Physical_Social_infra.pdf)  
[https://mohua.gov.in/pdf/6156db8e5ca2fCompendium\\_of\\_Recycle\\_and\\_Reuse\\_of\\_Wastewater\\_in\\_54\\_million\\_plus\\_cities.pdf](https://mohua.gov.in/pdf/6156db8e5ca2fCompendium_of_Recycle_and_Reuse_of_Wastewater_in_54_million_plus_cities.pdf)  
<https://mohua.gov.in/pdf/624eb498862a7Guidelines-for-Planning-Design-and-Implementation-of-24x7-Water-Supply-Systems.pdf>  
<https://punesmartcity.in/awards-accolades/>  
[https://pmc.gov.in/sites/default/files/miscellaneous/PuneDigitalStrategy\\_compressed.pdf](https://pmc.gov.in/sites/default/files/miscellaneous/PuneDigitalStrategy_compressed.pdf)

# IGBC and Government

## Driving Green Cities Initiative



Conference on Green Cities & Townships MUMBAI 2014



Conference on Green Urbanization ODISHA 2018



Navi Mumbai Municipal Corporation (NMMC) Office Building achieved IGBC Gold rating



2 Day Training Program on Green Concepts for Govt. of Goa Officials GOA 2018



Release of Tamil Nadu Carbon Foot Print study CHENNAI 2012



Session on Green Cities at Delhi Mumbai Industrial Corridor Development Corporation (DMICDC) DELHI 2018



CII Real Estate and Infrastructure Conclave AHMEDABAD 2019



Seminar on Mobility Led Urban Development AHMEDABAD 2019



Awareness session conducted on Green Building concepts to officials of DTCP GUNTUR 2019



IGBC partnered with APCRDA for the Amaravati Design Challenge during Happy Cities Summit VIJAYAWADA 2019



Haritha Haram - Tree plantation program of Govt. of Telangana 30 LAKH PLANTATIONS SINCE 2016



Digital Telangana & Swachh Telangana initiative HYDERABAD 2018



WorldIGBC & IGBC Workshop on Building Efficiency Accelerator for city of Coimbatore 2017



MNRE & IGBC Workshop on Green Concepts across 10 Cities in India 2015



IGBC at National Conference on Highways, Bridges and Tunnels Construction Technology HYDERABAD 2019



GHMC presentation at Conference on Green & Smart Cities GREEN BUILDING CONGRESS 2018 HYDERABAD



Presentation on Green Cities Success stories by city authorities at CII-IGBC Conference on Green & Smart Cities GREEN BUILDING CONGRESS 2018 HYDERABAD



Confederation of Indian Industry



IGBC

# A SNAPSHOT OF GREEN TRANSFORMATION IN TWO INDIAN CITIES



New Town Kolkata received the IGBC Green Cities plaque in the presence of Hon'ble Minister Shri Hardeep Singh Puri at Green Building Congress 2018, Hyderabad

CITY'S ECO-VISION

## SMART, LIVABLE AND ICONIC CITY OF GUJARAT

WITH INCLUSIVE GROWTH AND SUSTAINABLE DEVELOPMENT, BY LEVERAGING ITS HISTORICAL STRENGTHS AND PROVIDING STATE OF THE ART INFRASTRUCTURE, DELIVERY OF SERVICES AND EMPOWERING ECOSYSTEM BY ENABLING CITIZENS TO REALIZE THEIR DREAMS



### Land Use Planning

- Poly-centric mixed use development



### Water Management

- 24x7 water supply with SCADA system
- Metered distribution
- Storm water outfall to open into 3 natural lakes



### Energy Efficiency

- Solar power plan
- Smart and robust infrastructure
- District cooling system
- Integrated Control and Command Center with traffic management
- NMT & BRT Network



### Resource Management

- Preserving & rejuvenating 3 existing lakes
- High density development



## INDIA'S FIRST Smart City IGBC Platinum Green City

Energy Savings : Approx. 65 Million kWh/ year



100% LED Street Lighting  
8.5 million kWh/ year



Solar power plants  
55.6 million kWh/ year

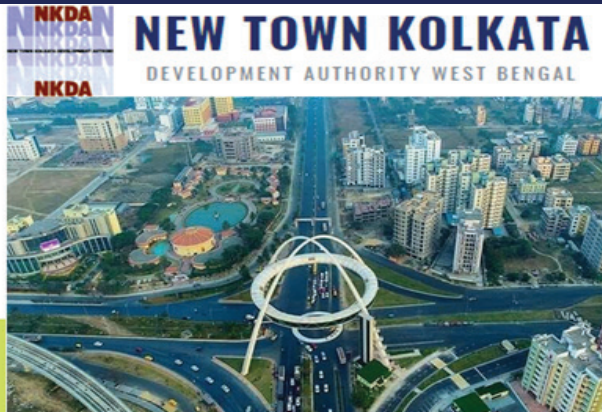


Waste to Energy plant  
1.02 million kWh/ year

City Level Measures Under 24 Green City Indicators



## INDIA'S FIRST Green Satellite City



CITY'S ECO-VISION

## FUTURE READY GLOBAL SERVICES HUB

ATTRACTING THE BEST TALENT WITH A FINE WORK-LIFE BALANCE



### LAND USE PLANNING

- 40% mixing of office space in residential area
- 30% of the Area allocated for green and social activities
- 27% of housing allocated for EWS & LIG
- Additional 10% FAR for green building projects



### SUSTAINABLE MOBILITY

- 100% barrier-free accessibility in all pedestrian, road crossings and public buildings
- 81% of developed area have mass transit facilities within 800 m
- 100% pedestrian network for all road categories
- Well connected bicycle lanes, Bicycle stands, cloud connected Public Information System



### ENERGY MANAGEMENT

- 100% LED based solar powered street light, LoRaWAN based street lighting for efficient management
- Solar Roof top panels to meet 10% of city's energy demand



### WATER MANAGEMENT

- SCADA and smart metering system to ensure Non revenue water less than 5%
- 1.9 million gallon per day of rain water can be utilized during monsoon
- All buildings to install rain-water harvesting, Modification of Building Rules
- 100% waste water treatment and reuse for non-potable applications



### SOLID WASTE MANAGEMENT

- 100% door to door collection of waste
- Over 70% of all Solid Waste Management Vehicles and Street Sweeping Vehicles with GPS trackers



Mr Amit Arora, IAS, Rajkot Municipal Commissioner received the IGBC Green Cities plaque from Chairman & Co-chair of IGBC Ahmedabad Chapter in Sep 2021



**MOU SIGNING  
BETWEEN  
SMART CITIES  
AND  
CII- INDIAN GREEN BUILDING  
COUNCIL**



**For Collaborative promotion  
and implementation of  
Green City initiatives  
and Green Building Concepts**

**WorldGBC  
REPORT**

**Beyond Buildings: Why an integrated  
approach to buildings and  
infrastructure is essential for  
climate action and sustainability**



**CASE STUDY - INDIA GBC:**

India GBC are addressing Green Transit Infrastructure as part of 3 exclusive rating programmes (for Metro projects, for Railway/Commuter Rail projects, for High Speed Rail projects). So far, 600+ transit facilities have adopted the rating programs.

India GBC had brought out the following 3 guidance documents for development authorities and developers to apply green concepts and planning principles in several Indian cities, resulting in reduced environmental impacts that are measurable and improving the overall quality of life:

1. IGBC Green Cities Rating (For greenfield cities) 2015
2. IGBC Green Cities Rating (For existing cities) 2017
3. IGBC Green Hill Habitat Rating (For Hill cities & towns) 2018

So far, India GBC Green Cities concept has been adopted by 20+ Indian cities including:

- Greenfield cities: New Town Kolkata, Sri City, Dholera Industrial City, GIFT City, Mahindra Industrial City in Gujarat & Tamil Nadu, Auric City, Reliance SEZ, Kandla SEZ, Pharmez city

- Existing cities: Rajkot, Visakhapatnam, Bhopal, Panchkula, Pune, Hyderabad



**IGBC encourages Cities to adopt  
SDG Driven Sustainable  
Urbanisation Strategy addressing  
the National priorities :**

**Energy Security, Water Security,  
Food Security, Air Quality,  
Green Cover, Waste Management**

**For more details, please contact**

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Fax: +91 40 44185189. E-mail: gbc@cii.in

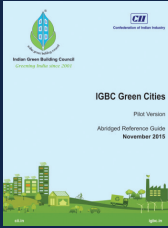
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# BENCHMARKING TOOL FOR GREENING OF INDIAN CITIES

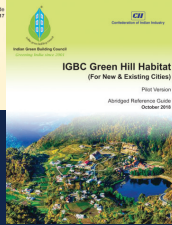
**25**  
**CITIES**  
GOING GREEN IN INDIA



**IGBC Green Cities Rating System  
(For Greenfield Cities)**  
Green Rating for City Master Plan & Design



**IGBC Green Cities Rating System  
(For Existing Cities)**  
Green Rating for City's Operational Performance



**IGBC Green Hill Habitat Rating System  
(For Greenfield and Existing Hill Cities)**  
Exclusive Green Rating for Hill-centric Development

The 'Green Cities' concept seeks at promoting an eco-friendly city that balances social, economic, and environmental dimensions, as well as good urban governance as its foundation. Under this concept, cities are encouraged to embrace sustainable urban development principles into city planning framework and convert environmental problems into opportunities and appropriate solutions.



**GREEN BUILDING CONGRESS®**

INDIA'S FLAGSHIP CONFERENCE & EXPO ON GREEN BUILT ENVIRONMENT

**23 - 25 NOVEMBER 2023**

CHENNAI TRADE CENTRE | CHENNAI | INDIA

**CII - Sohrabji Godrej Green Business Centre**

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