annexure 02

TIRUPATI SMART CITY

Smart City MISSION TRANSFORM NATION

MUNICIPAL CORPORATION TIRUPATI

AECOM pwc

A	B	C	D	E	F	G	H	I	J	K
	Feature	Definition	Scenario 1 (BASE)	Scenario 2	Scenario 3	Scenario 4 (ADVANCED)	Self-assessment for the full city with regard to each feature	Basis for assessment and/or quantitative indicator (Optional - only if data exists)	Projection of 'where the city wants to be' with regard to the feature/indicator based on the city vision and strategic blueprint	Input/Initiative that would move the city from its current status to Advanced status (Scenario 4: Column G)
1	Citizen participation	**A smart city constantly shapes and changes course of its strategies incorporating views of its citizen to bring maximum benefit for all. (Guideline 3.1.6)**	The City begins identifies priorities and projects to pursue without consulting citizens.	City undertakes citizen participation with some select stakeholders. The findings are compiled and incorporated in some projects or programs. Very few major decisions are shared with -citizens until final projects are unveiled.	City conducts citizen engagement at city level and local area level with most stakeholders and in most areas. The findings are compiled and incorporated in projects or programs.	City constantly conducts citizen engagement with people at each Ward level to incorporate their views, and these shape priorities and development projects in the city. Multiple means of communication and getting feedback such, both face-to-face and online are utilised. The effectiveness of city governance and service delivery is constantly enhanced on the basis of feedback from citizens.	**Scenario-2**	• Complaints redressal on the same day-95% • Total reach of citizen engagement in previous SCP - 53% of the total population • Citizen engaged online - 60%; my gov-1.3 lakh;facebook 17lakh outreach • Janmbhoomi Program - ward level consultations of Government of Andhra Pradesh - This is held twice a year	**Scenario-4**	• Upgrading the existing MCT website as a part of PAN city initiative to make it central portal for public outreach, grievance redressal and city services by linking it to websites of other related departments, city database and social media. • Level of engagaement with citizens done as a part of Smart City proposal will be continued for all future city initiatives- WiFi Zones at Social Spaces, Online Kiosks to be retained, Workshops with Stakeholders and FGD to be conducted on regular basis etc . • Aspirations of the transient population to be considered through initiatives like Digital kiosks for Pilgrims. • State Fibrenet project to give doordstep internet access of 20mbps
2	Identity and culture	**A Smart City has a unique identity, which distinguishes it from all other cities, based on some key aspect: its location or climate; its leading industry, its cultural heritage, its local culture or cuisine, or other factors. This identity allows an easy answer to the question "why in this city and not somewhere else?" A Smart City celebrates and promotes its unique identity and culture. (Guideline 3.1.7)**	There are few architectural monuments, symbols, and festivals that emphasise the unique character of the city. Built, natural and cultural heritage is not preserved and utilised or enhanced through physical, management and policy structures.	Historic and cultural resources are preserved and utilised to some extent but limited resources exist to manage and maintain the immediate surroundings of the heritage monuments. New buildinds and areas are created without much thought to how they reflect the identity and culture of hte city.	Historic and cultural heritage resources are preserved and utilised and their surroundings are well-maintained. Public spaces, public buildings and amenities reflect the cultural identity of the city.	Built, natural and intangible heritage are preserved and utilised as anchors of the city. Historical and cultural resources are enahnced through various mediums of expression. Public spaces, open spaces, amenities and public buildings reflect local identity and are widely used by the public through festivals, events and activities.	**Scenario-2**	• On an average the city receives about 21 lakh pilgrims every month • Total no of lakes within the city-7 • Natural assest abutting the city Seshachalam Bio-reserve-4755.9 sq.km Sri venkateswara National park - 353 sq.km Sri venkateswara Zoological park - 22.12 sq,km • A melting pot of various festivals - Annual Brahmotsavam of the Lord Venkateswara, Govindaraja Swamy, Padmavati, Gangamma, & Kapileswara Swamy, which attracts large congregration of people • Challenges of sanitation, parking, visual clutter in traditional temple areas of Govindraja Swamy kondandarama temple • Limited spaces and opportunity for conducting fairs/events/shows in areas of fine arts, performing arts, culinary, culture • Untapped Eco-tourism	**Scenario-4**	• Re-imagining the City- Tirupati has the potential to emerge as one of the top destinations in India by leveraging its natural and cultural heritage that is supported by a strong and dynamic institutional base- art, dance, language, culinary schools etc. • Preserving and Celebrating the Natural heritage of the city- lakes, forest, parks etc.- by implementing buffer zones around tanks, carrying out lake rejuvination projects, regular maintenance etc. • Developing a City Level Tool Kit with Tour Maps, heritage walks, information on hotels, bus, train, restaurant, things to do etc. to inform and engage tourists and residents alike. • Inducing a local Identity through initiatives like Street Art that engages local artists (krishna paintings), Cultural Signage Project etc. • Promotion of the Cultural Heritage by branding-encouraging it through festivals, events, art and cultural learning centers etc. • An arts district to celebrate arts and culture;
3	Economy and employment	**A smart city has a robust and resilient economic base and growth strategy that creates large-scale employment and increases opportunities for the majority of its citizens. (Guideline 2.6 & 3.1.7 & 6.2)**	There are some job opportiunities in the city but they do not reach all sections of the population. There are a high number of jobs in the informal sector without sufficient facilities.	There is a range of job opportunities in the city for many sections of the population. The city attemps to integrate informal economic activities with formal parts of the city and its economy.	There are adequate job opportunities for all sections of society. But skill availability among residents can sometimes be a challenge.	There are adequate opportunities for jobs for all sections of income groups and skill levels. Job-oriented skill training supported by the city and by industry. Economic activities are suited to and build on locational and other advantages of the city.	**Scenario-1**	• The economy of Tirupati is largely Pilgrim and Tourism based with majority of the population engaged in hospitality, transport and related services. • 1465 Street vensdors in the city; 16,000 auto drivers in city; High volume of daily wagers in construction, real estate sectors (24,000) • Employment Ratio of City - 33.3%	**Scenario-4**	• Diversifing economic base through a) innovation centres and start ups in sectors like arts, culinary, vedic studies etc. Capitalizing on upcoming 3 Mobile Manufacturing Industies that will generate about 25,000 jobs in the city, Vizag chennai industrial corridor(VCIC)will provide ample employment oppurtunities for the region. b) developing Skill Development Centres, self-learning programs and ITIs that train local population in construction, electrical, electronics, hospitality and related services. Empowering women and local SSG groups through MEPMA by training them in tailoring, frame making and other arts. c) Encouring Tourism by promoting local art and culture - kalamkari and other handicrafts- through initiatives like crafts mela, night bazzaars, events during important festivals etc. d) Arts District Bus Depot result into jobs creation - 2500 • Mainstreaming the Street Vendors • upcoming Innovation Creativity Collaboration (IC2) with collabration with university of austin,International Institute of Digital Technologies(IIDT) with 5 school of excellence in areas of Internet of Things & Cloud, Cyber Security, Big Data Analytics, Model Computing & Digital User Experience with Mahindra Tech, SIEMENS Centre of Excellence and Technical Skill Development Institue (TSDI)
4	Education	**A Smart City offers schooling and educational opportunities for all children in the city (Guideline 2.5.10)**	The city provides very limited educational facilities for its residents. There are some schools but very limited compared to the demand. Many schools are in poor condition.	City provides adequate primary education facilities within easily reachable distance of 15 minutes walking for most residential areas of the city. The city also provides some secondary education facilities.	City provides adequate primary and secondary education facilities within easily reachable distance for most residential areas of the city. Education facilities are regularly assessed through - databases of schools including number of students, attendance, teacher - student ratio, facilities available and other factors.	City provides adequate and high-quality education facilities within easily reachable distance of 10 minutes walking for all the residential areas of the city and provides multiple options of connecting with specialised teaching and multi media enabled education. Education facilities are regularly assessed through database of schools including number of students, attendance, teacher-student ratio, facilities available and other factors.	**Scenario-3**	• No of school schools- 334 public-67, private-267; primary- 160, Upper primary-39, High school-135 • Junior colleges-42 • Student teacher ratio- 1:20 • Schools are located within 800-1500 m distance	**scenario-4**	• Introducing Sustainable Study Curriculum in schools- Encouraging nature based teaching so that values of sustainability and respect for environment are incultated in children at an early stage. • Upgradation of the exisitng schools and colleges- setting up E-libraries, digital class rooms, e-paatshalas etc. • Ensuring safe access to the schools and colleges- introducing the concept of dedicated school routes (vehicle free routes during mornings and evenings) • Provide safe environment through CCTV surveillance • Smart Classrooms • Biometric attendance system to track students and teachers attendance • Student Performance Management Solution – student evaluation, rewards and motivation for high performers • Teacher Performance Management Solution – Teacher performance evaluation programme
5	Health	**A Smart City provides access to healthcare for all its citizens. (Guideline 2.5.10)**	Healthcare is difficult for citizens to access - demand for healthcare often exceeds hospitals' ability to meet citizen needs.	The city provides some access to healthcare for its residents but healthcare facilities are overburdened and far from many residents. Access to preventive health care is only easily available for some residents.	City provides adequate health facilities within easily reachable distance for all the residential areas and job centers of the city. It has an emergency response system that connects with ambulance services.	City provides adequate health facilities at easily accessible distance and individual health monitoring systems for elderly and vulnerable citizens which are directly connected to hospitals to prevent emergency health risks and to acquire specialised health advice with maximum convenience. The city is able to foresee likely potential disases and develop response systems and preventive care.	**Scenario-3**	• Total no of beds -5500; Beds/population- 1 bed for 68 ppl • Total no of Hospitals-78 public- 3;TTD-3;private-72;UHC-7 • Presence of specalized institutes such as Balaji Institute of Surgery, Research and Rehabilitation for the Disabled(BIRRD), Sri Venkateswara Ayurvedic hospital,Sri Venkateswara Institute of medical sceinces, largest maternity hospital in the state. • Cases attended by emergency services 108 service-30 cases/day Thalli-bidda express(pregnent ladies special vehicle)- 20 cases/day	**scenario-4**	• Promoting a healhty lifestyle by providing dedicated/safe walking, cycling paths with increased number of active recreation spaces thereby moving people away from a sedentary lifestyle. • using technology such as mosqito sensors. • Single point source for all health information of the citizens. Online health portal and Electronic Health Records. Smart Health Card. • Modernisation of the urban health centres with state of the art lab equipment. • Access to AYUSH practitioners.promotion of Indian systems of medicine. • Health screening kiosks providing real time data on potential health risks for city, advanced medical facility with data centre. • Citizens can be encouraged to share their health feedback and experiences through the mobile apps.
6	Mixed use	**A Smart City has different kinds of land uses in the same places; such as offices, housing, and shops, clustered together. (Guidelines 3.1.2 and 3.1.2)**	The city has mostly separated uses and areas are focused either on residential, commercial, or industrial, with little co-existance of uses. The average resident cannot walk to the closest market or shops near his or her home. For almost everyone, going to work or going shopping for basic needs requires a journey by automobile or bus of more than 15 minutes. Land use regulations prevent putting commercial or office locations in residential neighborhoods and vice versa.	In some parts of the city , there is a mixture of land uses that would allow someone to live, work, and shop in close proximity. However, in most areas, there are only small retail stores with basic supplies near housing. Most residents must drive or use public transportation to access a shop for food and basic daily needs. Land use rules support segretating housing, retail, and office uses, but exceptions are made when requested.	Most parts of the city have housing, retail, and office buildings in close proximity. Some neighborhoods have light industrial uses within them (e.g., auto repair, craft production). Land use rules allow for mixed uses.	Every part of the city has a mix of uses. Everyone lives within a 15-minute trip of office buildings, markets and shops, and even some industrial uses. Land use rules require or encourage developers to incorporate a mixture of uses in their projects.	**Scenario-2**	• Informally there is a trend of co-existence of different functions at block level within the city fabric. • Total land under Mix-use landuse: 64.96 Ha(2.2 % of total land)	**Scenario-4**	• Currently Under preparation, Masterplan 2035 promotes Mixed-Use in all parts of city. • Identifying Under-utilized pockets within the city fabric and encouraging mix-use developments - The bus depot refurbishment, Vegetable market refurbishment,art district,slum redevlopment.

7	Compact	**A Smart City encourages development to be compact and dense, where buildings are located close to one another and are ideally within a 10-minute walk of public transportation, forming concentrated neighborhoods. (Guidelines 2.3 and 5.2)**	The city is expanding rapidly at its periphery into undeveloped land, rural or natural areas, or along industrial corridors - both formally and informally. Formal new development is occuring in a way that is "sprawling," meaning that the buildings spread across a wide area and are far from one another. Residents or tenants find it easier or safer to travel by automobile because it takes a long time to walk between destinations and there are busy roads separating buildings. Large pockets of land in the inner-city are vacant. New developments at the periphery tend to be large-scale residential developments, often enclosed with a gate and oriented to the automobile.	The city has one or two high density areas - such as the city center, or historic areas, where buildings are concentrated together and where people can walk easily from building to building and feel as though they are in center of activity. Most of the city consists of areas where buildings are spread out and difficult to walk between, sometimes with low-density per hectare. Regulations tend to favor buildings that are separated from one another, with lots of parking at the base and set-back from the streets. The city likely has some pockets of under-utilized land in the center. New formal developments at the periphery tend to be large-scale residential developments, often enclosed with a gate and oriented to the automobile.	The city has multiple high density clusters that are easy to walk around where buildings are close together. However, the city actively encourages development to occur on under-utilized parcels of land into high-density, walkable areas. When new formal large-scale development projects happen at the periphery, they are encouraged to be dense and compact, with buildings that are close together and line the streets. The city actively encourages or incentivizes re-development of under-utilized parcels in the inner-city, especially those located close to public transportation.	The city is highly compact and dense, making the most of land within the city. Buildings are clustered together, forming walkable and inviting activity centers and neighborhoods. Regulations encourage or incentivize re-development of under-utilized land parcels in the city center. Buildings are oriented to the street — and parking is kept to a minimum, located below ground or at the back of buildings. Public transport and walking connects residences to most jobs and amenities. Residential density is at an optimal with affordable housing available in most areas.	**Scenario-2**	• The city has denser pockets towards city center, outer areas is sparsely developed. • population density- 14,000/sq.km • Social Infrastructure (parks, schools etc) in 15-20m distance • Presence of under-underutilized properties within such as land opp to bus stand(tamil bus stand site), vegetable market etc.	**Scenario-3&4**	• Promoting mixed-use neighborhoods with well-defined pedestrian and public transport environment- bus stand refurbishment, vegetable market, art district,slum redevelopemnt project • Encouraging the Compact & TOD through ongoing Tirupati urban development Authority master planning excercise.
8	Public open spaces	**A Smart City has sufficient and usable public open spaces, many of which are green, that promote exercise and outdoor recreation for all age groups. Public open spaces of a range of sizes are dispersed throughout the City so all citizens can have access. (Guidelines 3.1.4 & 6.2)**	The city has very few usable public open spaces and very few usable green spaces. Available recreational spaces are located far away and are dispersed at long distances around the city. The few available public open spaces offer a limited variety of experiences for all sections of population and age groups such as places for sport, places for rest, and places for play.	A variety of public open spaces are available in some neighborhoods, but are not available in all the areas of the city or are located far away from residential areas -Many of the open spaces have access restrictions, or are not well-maintained. A variety of types of public open spaces may be lacking, such as natural areas, green areas, parks, plazas, or recreation areas.	Most areas of the city have some sort of public open space. There is some variety in the types of public spaces in the city. However, public spaces are sometimes not within easy reach or access of more vulnerable populations and are more restricted in poorer neighbourhoods.	Public open spaces are well dispersed throughout the city. Every residential area and work space has access to open space within 10 minutes walking distance. Open spaces are of various types - natural, green, plazas, parks, or recreation areas - which serve various sections of people. Public spaces tend to truly reflect the natural and cultural identity of the city.	**Scenario-1**	• Total open space in the city - 3% • Total no of parks - 7 city evel-1; neighbourhood level-6 • Total per capita open space in the city - 0.39 sqm/person.	**Scenario-4**	• Addition of one new park and refurbhising 5 existing parks and beautification of traditional water bodies (Govindaraja pushkarini,CR reddy colony tank) • Collaboration between educational institutions and city for opening up their playgrounds to general public post school/college hours. • Giving back street to the public by introducing concepts like raahagiri. creating public spaces out of streets
9	Housing and inclusiveness	**A Smart City has sufficient housing for all income groups and promotes integration among social groups. (Guidelines 3.1.2)**	Housing is very limited and highly segregated across income levels. Population growth far exceeds the creation of new housing. The poor live in informal settlements with limited to no access to basic services, and are concentrated in a few areas. The wealthy live in separate enclaves. Those in the middle have few , if any options.	Housing is available at most income levels but is highly segregated across income levels. Population growth slightly exceeds the creation of new housing. The wealthy and the middle class have housing that meets their needs at costs appropriate to their income. The poor live in informal settlements.	Housing is available at all income levels, but is segregated across income levels. The growth of supply of housing almost meets the rate of population growth. Increasingly, lower and middle-income people can find housing in areas that are conveniently located.	A wide range of a housing is available at all cost levels. The supply of housing is growing at pace with population. Afforable, moderate, and luxury housing are found clustered together in many areas of the city	**Scenario-2**	• 29.9 % of population in Slums • Total no of slum house holds -24134(69 slums)	**Scenario-4**	• Completion of mission projects such as JNNURM by 31 march 2017, Housing for all in next 3 yrs time period. Insitu slum rehab & beneficiary led construction
10	Transport	**A Smart City does not require an automobile to get around; distances are short, buildings are accessible from the sidewalk, and transit options are plentiful and attractive to people of all income levels. (Guidelines 3.1.5 & 6.2)**	Personal automobile centric city with very few modal options. Long trip lengths for daily commute to work and education. Accessing various areas by walking or cycling is difficult. Women and vulnerable sections find it very difficult to move independently in the city. There is limited public transport. Vehicles cause high air and noise pollution levels in the city. Vehicles dominate public spaces and affect their effective functioning.	The street network system is elaborate but public transport choices are restricted. Public transport can be too expensive or unafforadable for the poor. Pedestrian infrastructure is only available in select areas. Tha majority of investments focus on reducing traffic congestion through the creation of more roads.	Network of streets are fairly complete. Public transport covers most areas of the city. However last mile connectivity remains incomplete -and affects transport options- Foot paths are accessible in most areas, whereas concerns of safe crossings and security throughout the day remain. Parking zones are demarcated but absence of pricing increases over utilization of parking lots.	Street network is complete and follows a clear structure. Public transportation network covers the entire city and intensity of connection relates with the demand. Plenty of options of public transport are available and affordable for all sections of the society. There is multi-modal integration at all mass transit staions and organized-priced on street and off street parking. Walking and cycling is prevalent.	**Scenario-1**	• Tirupati has low penetration of Public Bus Transport (Modal Share- 18%). • City bus fleet strength-20 • Total number of registered vehicles in Tirupati(2015)- 317589 2 wheelers-2,50,170; private 4 wheelers-18175 • The number of diesel operated auto rickshaws have gone up by 24 %in past 5 yrs. • Road network with footpath-13%	**Scenario-3**	• Incorporating Barrier free design. • making way for environment freindly battery operated smart buses for public transit • App based Traffic Information system that will provide real-time information about buses, trains, autos, available parking space etc. • Signal Synchronization, dedicated bicycle lanes, pedestrian walkway & hawker zones • 100% footpath coverage • Phasing out Diesel Autos with E-rickshaws • Encouraging NMT- public bike sharing system.
11	Walkable	**A Smart City's roads are designed equally for pedestrians, cyclists and vehicles; and road safety and sidewalks are paramount to street design. Traffic signals are sufficient and traffic rules are enforced. Shops, restaurants, building entrances and trees line the sidewalk to encourage walking and there is ample lighting so the pedestrian feels safe day and night. (Guidelines 3.1.3 & 6.2)**	The city is designed mainly for the automobile. Daily life without a car requires long bus rides. Walking is difficult and often dangerous; there are few pavements, existing pavements need repair and lack trees to provide shade for pedestrians, and marked pedestrian crossings are rare. New buildings have their main entrances set-back from the street, sometimes with large driveways or parking lots separating them from the street, and sometimes are are enclosed	Older areas of the city see a mix of pedestrians, cyclists, and vehicles but newer areas are focused mainly on the automobile. In the new areas, there are few pavements and main entrances to new buildings are not accesible from the front of the street. large driveways or parking lots often separating them from the street, and sometimes are are enclosed by gates. In these areas, traffic signals are disobeyed.	The city has a good network of pavements and bike lanes. Buildings in most areas of the city are easily accessible from the pavement. Howver, traffic signals are sometimes disobeyed and it can feel difficult to cross the street.	The city is highly walkable. Pavements exist on every street and are maintained. Trees line many sidewalks to provide shade for pedestrians. Buildings in most areas of the city are easily accessible from the sidewalk. Traffic signals control the flow of automobiles and are enforced. A network of bike lanes exists to promote cycling as a means of transport. Traffic rules are followed and enforced with great seriousness.	**Scenario-2**	• Foothpath/km of road -13% • Total reported accidents decrease from – 143 to 91(last 3 years) • Differently abled friendly streets 0%	**Scenario-4**	• Infrastructure provision such as walkways,footpaths, tree,(street scape) • Public bike sharing system. • encouraging NMT, vehicle free zones, pedestrianization of streets etc. • city survellance with network of CCTV cameras • e-challan systems • Dedicated ped & vehic zones especially
12	IT connectivity	**A Smart City has a robust internet network allowing high-speed connections to all offices and dwellings as desired. (Guideline 6.2)**	City has no major plans to bring increased high speed internet connectivity to the public.	The city has made plans to provide high speed internet connectivity through the existing framework.	The city makes has high speed internet connectivity available in most parts of the city.	The city offers free wifi services to provide opportunity for all the citizens to connect with high speed internet across the city.	**Scenario-2**	• No Wi-Fi hot spots in the city • In Tirupati more than 30 km of optical fiber out of 90 km planned is completed and the project is to be Completed and commissioned by July 2016 (across the state). • Reliance is laying down 4G infrastructure throughout the city & services has started rollout	**Scenario-4**	• Public Wi Fi services will provide seamless high speed internet services to citizens • State Fibre net project and its details • Availability of 4G services to the citizens • State of the art kiosks called Links will not only provide wireless connectivity
13	ICT-enabled government services	**A Smart City enables easy interaction (including through online and telephone services) with its citizens, eliminating delays and frustrations in interactions with government. (Guidelines 2.4.7 & 3.1.6 & 5.1.4 & 6.2)**	Essential Government services are not linked with online platforms. Paper intensive interactions with the local Government continues. Recieving services and response to citizen complaints take a long time. There is limited availability of data to monitor service delivery.	Some of the public services are provided online and infrastructure for total digitalization is not in place. Service delays occur regularly in some sectors. Responses to citizen inquiries or complaints are often delayed. No integration between services and billing.	Most of the services are provided online and offline. Data transparency helps monitoring. Systema and processes to better coordinate between various Government agencies are being developed.	All major services are provided through online and offline platforms. Citizens and officials can access information on accounting and monitor status of projects and programs through data available on online system. Robust data infratsructure system shares information and enhances internal governmental coordination.	**Scenario-2**	• Limited Avenues of citizen engagement and participation • Internet penetration is low • Online services are offered under different portals and schemes • Backend processes of most service delivery is not automated • CDMA dashboard is present for analytics for Property, water & vacant land tax, building permissions, AADHAR seeding, LED street light, solid waste, Swachh Bharat, JNNURM, sewerage, Strom water, water, Roads • ULB website:All the relevant local initiatives are incorporated on the corporation website under the relevant departmental sections. • Statutory documents - Municipal acts, building bye-laws, recent government orders, circulars, budget allocations, Council Resolution are available online (CDMA) • Meekosam-An online grievance redressal system, toll free number for complaints, have led to resolution of 95% grievances on same day	**Scenario-4**	• Open data platforms to provide access to current and archived Government data • Use of social media • Multi channel citizen interface like digital kiosks, web portal of MCT, mobile apps will bring services to the door steps of the citizens • Integrated command and operations centre • E Office implementation • State of the art kiosks called Links will not only provide wireless connectivity throughout the city, they will also provide free national calls, touchscreen web browsing, rapid charging stations and access to city services • Mobile Apps
14	Energy supply	**A Smart City has reliable, 24/7 electricity supply with no delays in requested hookups. (Guildeline 2.4)**	There is only intermittent electricity supply with regular power shedding. Many residents have to plan their days around when power is available.	Electricity supply and loads are managed as per demand and priority for various functions with clear scheduling, with electricity being available in many areas for most hours of the day.	Electricity is available in most parts of the city for most hours of the day but some areas are not so well-served. Smart metering exists in some parts of the city but not all.	Electricity is available 24 x 7 in all parts of the city with smart metering linked to online platforms for monitoring and transparency.	**Scenario-3**	• Transmission- Distrubution losses- 5% • High accurancy metering system • 100% coverage of electricity supply with High accurancy metering system • unscheduled power cuts are zero. • efficient public outreach through toll free no. 1915, call centre, moblie app, online payments,installing • "anytime payment" machines, E-Sewa centers etc. across various locations. • System Average Interruption Frequency Index (SAIFI): 1194 • System Average Interruption Duration Index (SAIDI) 692 min	**Scenario-4**	• Installation of smart electric meters • Initiatives in the city to achieve the reliability of power like underground cabling
15	Energy source	**A Smart City has at least 10% of its electricity generated by renewables. (Guideline 6.2)**	The city does not have any renewable sources of energy and there is no commitment to promote this for the forseeable future.	The city is preparing plans for ensuring that it gets more energy from renewable sources and is in the process of making commitments in this regard.	Some energy consumed is the city is produced through renewable sources. There are long term targets for higher renewable energy capacities and the city is making plans to achieve these.	At least 10% of the energy used in the city is generated through renewable sources. The city is undertaking long-term strategic projects to tap renewable sources of energy in its region/beyond to increase the percentage of renewable energy sources.	**Scenario-2**	• The rooftop solar energy connections have been given to 47 houses and they are synchronized to the main grid. • 30KW capacity solar power system are installed in circle offices across district. • 100 KW capcity solar power systems are installed on DISCOM offices, TTD Office within the city.	**Scenario-4**	• GO 33 brings out a clear mandate that all the new buildings coming up above a certain plot size shall have mandatory solar roof top. Solar water heating systems and the provision of solar power. Building bye laws shall be strictly enforced. • Green buildings • Solar powered bustbins • Leveraging on the solar cities programme where all smart cities shall be included.

16	Water supply	**A Smart City has a reliable, 24/7 supply of water that meets national and global health standards. (Guidelines 2.4 & 6.2)**	The city has a poor water supply system with limited water availability. There are no clear targets to achieve higher quality and optimal quantity standards. Unaccounted water loss is above 40%	The city has intermittent water supply and availability. However it is setting targets and processes in place to try to improve its water supply. Unaccounted water loss is less than 30%.	The city has 24 x 7 water supply in most areas but the quality of water does not meet international health standards. Unaccounted water loss is less than 20%.	The city has 24 x 7 treated water supply which follows national and global standards and also available in suffecient quantity and affordable across all sections of the society. Unaccounted loss less than 15%.	**Scenario-2**	• Exisitng water supply network in the city is 290 km. • At present, out of 63,077 houses (or 1,03,288) only 38,135 houses (or 73,201) have access to piped water supply connections.Out of these only 2182 are metered connections. Only 5.6% of the total connections are smart metered. • Unaccounted water losses are around 27%. • Frequency of Water Supply : once in two days to daily supply(last 3 years) • Per capita supply : 105 to 135 LPCD(in last 3 years) • Additionaly, there are 3196 public taps in the city	**Scenario-4**	• Map and monitor the physical infrastructure. • Smart Water meters • Sensors placed strategically through out the network to detect contaminants. Also, measurement of water turbidity, salinity, conductivity, pH and chlorine levels in real time using installed sensors. • Green Water systems instrumentation can store water while advanced analytics are critical to managing this distributed resource. • SCADA
17	Water management	**A Smart City has advanced water management programs, including smart meters, rain water harvesting, and green infrastructure to manage stormwater runoff. (Guideline 6.2)**	The city does not measure all its supply. It does not recycle waste water to meet its requirements and rain water harvesting is not prevalent. Flooding often occurs due to storm water run-off.	The city has meters for all its water supply but lacks mechanisms to monitor. Water wasteage is very high. Some, but not much, rainwater harvesting exists.	The has meters for all its water supply with some smart mechanisms to monitor. Rainwater harvesting systems are installed and storm water is collected and stored in water bodies. However, recycling of waste water and reusage of storm water is limited.	The city has meters for all its water supply. It includes smart mechanisms to monitor remotely. Rainwater harvesting systems are installed and utilised through the city and storm water is collected and stored in water bodies and treated for usage. Recycled waste water is supplied for secondary uses.	**Scenario-1**	• Till now 2195 meters out of 34135 are metered connections. • There are about 500 rain water harvesting pits for ground water recharge. • Inspite of a number of lakes and tanks within the city fabric, these natural assets are neglected and unmaimtained. The links between are broken and water quality is degrading. • Strom water drainage length-289 km(65.83%)	**Scenario-4**	• Smart metering • Construction of soak pits and Geo Tagging • Groundwater sensors to monitor the increase in water levels • SCADA system to monitor the management of the water supply • Make better use of diffuse and distributed water resources through recapture, recycling, reuse and better planning. • Smart sensors • Legal back up. Smart Policy in place. Implementation of GOMs No 33 and GOMs No 156 dated 23.02.2015 and 23.06.2015 respectively.
18	Waste water management	**A Smart City treats all of its sewage to prevent the polluting of water bodies and aquifers. (Guideline 2.4)**	The city is unable to treat all its sewage. Many local sewer lines open on to water bodies and open ground and pollute the environment.	Most waste water is collected and treated before before disposal. However the treated water does not meet standards and is not recycled for secondary uses.	All the waste water is collected and treated before before disposal. It is also treated to a high standard and some is recycled.	The city has zero waste water because all the waste water is collected, treated and recycled. It meets standards an reduces the need for fresh water.	**Scenario-2**	• Only 23,500 houses have sewer connections. Rest use septic tanks. • At present there are 2 STPs of 25 MLD each against total generated sewage of 6 MLD. Although, 100% of the total collected sewage is treated, the technology adopted in these STPs allow them to treat the Sewage only upto primary and secondary levels. • 1MLD of treated water is used for Industrial use. Other than that, Recycling of waste water is not practiced	**Scenario-4**	• Sewage Treatment Plant to brought to the secondary level of treatment and the water reused for industrial purposes. • Saturating the connections to the individual households under the AMRUT scheme and mandating taking the connections.
19	Air quality	**A Smart City has air quality that always meets international safety standards. (Guideline 2.4.8)**	City does not have plans, policies or programs to improve the air quality. Systems to monitor air quality are absent.	City has programs and projects to monitor air quality and spatialising the data to ascertain reasons for degrees of pollution in the air. A few strategies to decrease air pollution have been implemented.	City has programs and projects to monitor air quality and spatialising the data to ascertain reasons for degrees of pollution in the air. Pollution levels are acceptable.	The city has clean air by international standards. Live Air quality monitoring cover the entire city and data of air quality are mapped.	**Scenario-2**	• One Continuous Ambient Air Quality Monitoring station is located at Regional Science Centre, Chittoor Bypass, Tirupati. • Air pollution data available for 2009 to 2012 indicate indicates PM10 levels increasing to critical stage. APPCB officials indicated the the ambient air quality could exceed the presecribed standards at the major traffic circles, but the air quality data to collborate the same is not available. • Air quality in the city- respirable suspended particular matter(RSPM)-60-70 micrograms/Cu.m • So2 content: 15-20 micrograms/Cu.m; NOx content: 15-20 micrograms/Cu.m	**Scenario-4**	• Continuous monitoring through the use of smart pollution meters following the philosophy of frugal innovation • Reduction in the use of vehicles especially private vehicles by the use of energy efficient public transit facilities. • E rickshaws and promotion of NMT
20	Energy efficiency	**A Smart City government uses state-of-the-art energy efficiency practices in buildings, street lights, and transit systems. (Guideline 6.2)**	City has no programs or controls or incentive mechanisms to promote or support energy effeciency in buildings	The city promotes energy efficiency and some new buildings install energy effeciency systems that track and monitor energy use and savings.	Most new public buildings install energy effeciency systems and some older buildings are also retrofitted to be more energy efficient. Local government conducts counselling and outreach with developer, businesses and residents to adopt energy effeciency strategies	All the existing old and new public buildings employ energy effeciency principles in development and operation and apply for energy rating by national and international forums. Many non-public buildings are also energy efficient because the government promotes energy efficiency through incentices and regulations.	**Scenario-2**	• 95% of the street lights are converted to LED (10,300 implemented • presence of energy efficient buikdings- minimal	**Scenario-4**	• Promotion of energy efficiency in the buildings with the effective implementation of GOMs No 33 and GOMs No 156 • Conversion of all the street lights to LED • Building of an energy efficient public park with the installation of solar roof top • Use of e rickshaws and battery operated buses in the city. • Energy audit of buildings to ensure compliance. • Smart electric metersleading to voluntary actions to further reduce the carbon footprint. • Intelligent Streetlights provide increased energy savings and reduced maintenance costs without compromising the comfort or safety or road users.
21	Underground electric wiring	**A Smart City has an underground electric wiring system to reduce blackouts due to storms and eliminate unsightliness. (Guideline 6.2)**	City does not have plans for underground electric wiring system.	More than 40% of the city has underground electric wiring system.	More than 75% of the city has underground electric wiring system.	More than 90% of the city has underground electric wiring system.	**Scenario-1**	• No underground electric wiring is in place	**Scenario-4**	• Underground electric cabling to be taken up to reduce the vulnerability during disasters, reduction of visual clutter and safety of the citizens and the pilgrims.
	Sanitation	**A Smart City has no open defecation, and a full supply of toilets based on the population. (Guidelines 2.4.3 & 6.2)**	Many parts of the city do not have access to sanitation infrastructure and facilities.	Sanitation facilities are availabile to 70% of the city's population.	Sanitation facilities are available to 90% of the city's poopulation.	Sanitation facilities are available to 100% of the city's population.	**Scenario-3**	• Identify (nos. of) open defecation areas-21 • Number of households without access to toilet- 8-10% • No of commercial areas without a public toilet at a distance of 1 km - 30 • No of schools without proper access to toilets - 31	**Scenario-4**	• Access of funds through the IDF-OI initiative • Setting up of public toilets on a large scale • Construction of Community and IHHTs • Construction of toilets in schools • Enhancement of the UDS facilities across the city in convergence with AMRUT • Open Defecation free by Oct 2, 2016
23	Waste management	**A Smart City has a waste management system that removes household and commercial garbage, and disposes of it in an environmentally and economically sound manner. (Guidelines 2.4.3 & 6.2)**	Waste collection systems do not pick up waste on a frequent basis and waste often enters into water bodies.	Waste generated is usually collected but not segregated. Recycling is attempted by difficult to implement.	Waste is segretated, collected, recycled and disposed in an environmentally sound manner.	The city reduces land fill caused by waste so that it is minimal. All the solid waste generated is seggregated at source and sent for recycling. Organic waste is sent for composting to be used for gardening in the city. Energy creation through waste is considered.	**Scenario-2**	• Door to door collection : 60% • Total collected municipal solid waste per capita -15.2 kg/month • Total waste generated in the city -5700 MT/month • Percentage of city's solid waste that is recycled- 21.5% • Percentage of the city's solid waste that is disposed of in a sanitary landfill -0% • Percentage of city's solid waste that is diposed of in an open dump - 73.6% • A 27 Metric Tons capacity biocompost plant has been developed at Thukivakam • Waste collected is dumped at an open landfill at Ramapuram	**Scenario-4**	• Reduce – Smart Waste Prevention: Public education, outreach and training • Trash container sensors with micro sensors help in communicating the fill level status to a central data centre. Integrated with a solar power compactor that pushes down the contents of the container. • Reuse – Reuse of solid waste can be done within the industry. C&D Waste Recycling plant can be taken up on PPP basis on the lines of the model adopted in Delhi in partnership with IL&FS. • RFID taghed bins and Tata ace mini compactors for effective door to collection • Fleet management solution • Recover – smart material recovery. The use of Material Recovery Facility (MRF). Mechanical Biological Treatment (MBT) and Waste to Energy Plant (WTE). • Dispose – smart waste disposal.
24	Safety and security	**A Smart City has high levels of public safety, especially focused on women, children and the elderly; men and women of all ages feel safe on the streets at all hours. (Guideline 6.2)**	The city has low levels of public safety - most groups of residents feel insecure during most parts of the day in many parts of the city.	The city has medium levels of public safety - some more vulnerable groups feel insecure during some points of the day and in some parts of the city	The city has high levels of public safety - all citizens including women, children and the elderly feel secure in most parts of the city during most time in the day.	The city has very high levels of public safety - all residents feel safe in all parts of the city during all hours of the day.	**Scenario-3**	• Crime rate – 53.3% to 45.3% (last 3 years) • Total reported accidents – 143 to 91 (last 3 years) • Complain redressal Efficiency – 94% to 98.2%; • Crime against women constant at 142 per/year • Surveillance & Command center - 166 Fixed and 34 PTZ Cameras at 39 major locations • Tirupati has ensured round the clock safety to its people by following measures like 24x7 Police Patrolling, and launching initiatives like Abhayam mobile app for women safety, 108 emergency helpline, 1091 toll free no, Face book page etc. • People using WhatsApp-1311; Complaints received through WhatsApp- 2423 • Complaints received through Tirupati police Face book page-95;Facebook page likes- 66941 • 1 Women police station included; 1 Mahila DSP for women safety; 5 to 8 women staff per Police Station; SHE team for women safety • Special Task forces are formed for crowd management during major festivals.	**Scenario-4**	• She teams of the police • Resilient city through the use of ICT • Accessibility optimisation through the use of mobile platforms and social media • Citizen reporting framework for outcome thinking • Video analytics enabled integrated city command and operations centre to monitor emergencies and disasters. • Online database of NGOs and CSOs that can help victims, especially women and children to access these services for physical and mental recovery • Community volunteer networks platform – social media and mobile enabled platform for community/community groups to collaborate with police for local safety and security issues.

annexure 03

TIRUPATI SMART CITY

Smart City MISSION TRANSFORM NATION

MUNICIPAL CORPORATION TIRUPATI

AECOM pwc

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3.1 Regional Context & City Profile

3.2 Base Map Layers & City Profile

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3.4 Key Ideas Emerging from Citizen Consultation

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3.6 Existing Structure plan

3.7 Catalytic Projects

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3.9 Strategies & Interventions

3.10 Strategies & Interventions

3.11 Strategies & Interventions

3.12 Strategies & Interventions

3.13 Strategies & Interventions

3.14 Pan City

3.15 Pan City

3.16 Scenarios Pert CPM Chart

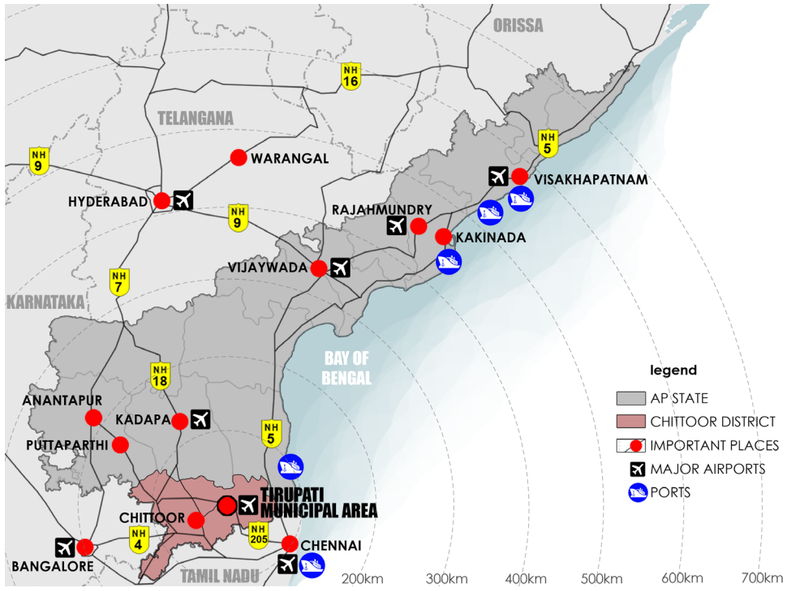
3.17 Convergence Matrix

3.18 Stakeholder Roles Organogram

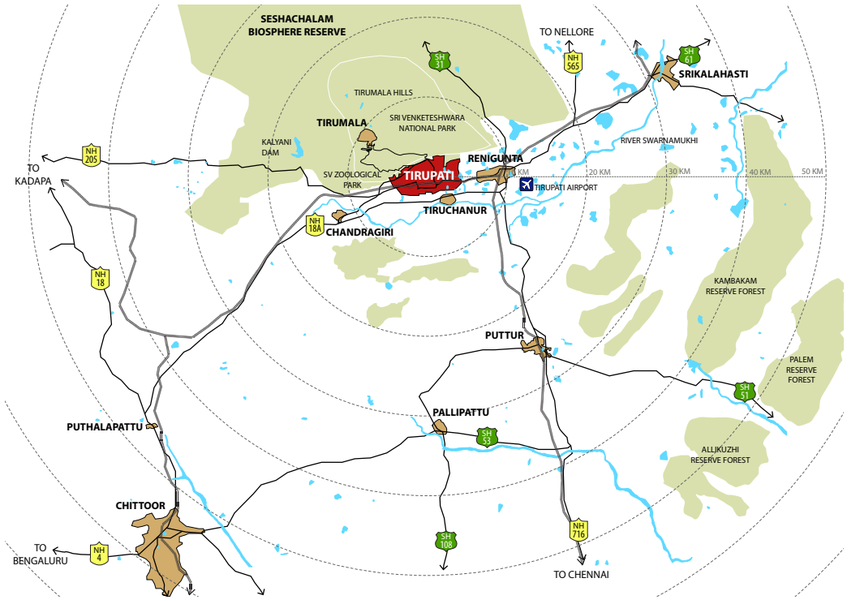
3.19 Itemised Costs smart city proposal

3.20 Financial Abstract

LOCATION MAP

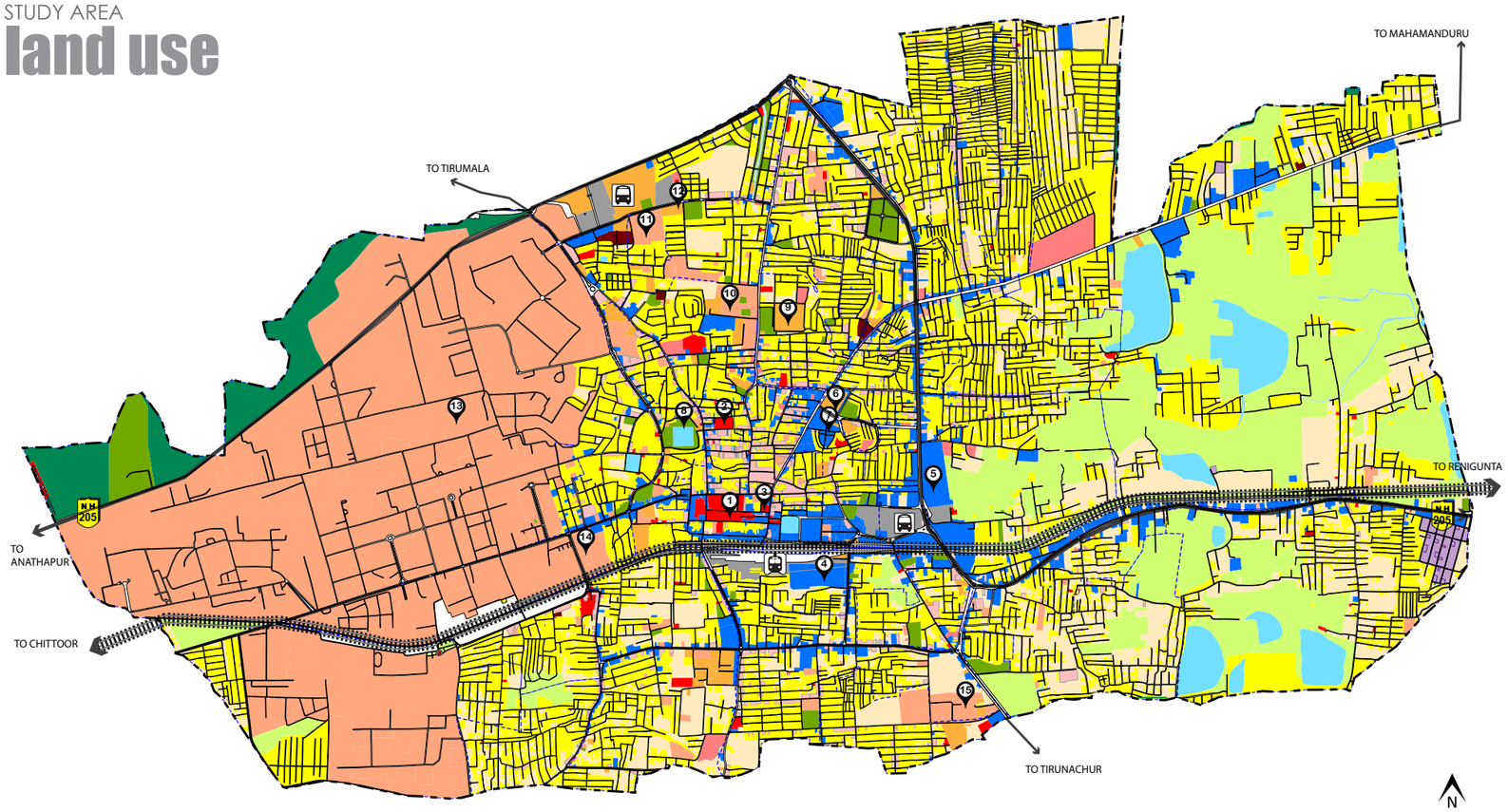


REGIONAL MAP



STUDY AREA

land use



legend-

LANDUSE

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- MIXED USE
- EDUCATIONAL INSTITUTES
- HOSPITAL AND HEALTH INSTITUTIONS
- RELIGIOUS
- OFFICES
- PUBLIC BUILDINGS
- SLUMS
- VACANT LAND
- TRANSPORTATIONAL LAND

OPEN SPACES AND WATER FEATURES

- PUBLIC OPEN SPACES / PARKS
- AGRICULTURE
- FOREST
- RIVERS, CANALS, LAKE AND WATER BODIES / PONDS

TRANSPORTATION

- INTERNAL ROADS
- MAJOR ROADS
- RAILWAY STATION
- RAILWAY LINE
- BUS TERMINAL

LANDMARKS

1. GOVINDARAJA SWAMI TEMPLE
2. KANDANDA RAMA SWAMI TEMPLE
3. KONERU
4. GOVINDRAJA CHOULTARIES
5. SRINIVASA PILGRIM CENTER
6. MUNICIPAL CORPORATION TIRUPATI
7. MUNICIPAL VEGETABLE MARKET
8. NARASIMHA TEERTHAM
9. TTD BHAVAN
10. SV POLYTECHNIC COLLEGE
11. KENDRIYA VIDYALAYA
12. ISKON TEMPLE
13. SRI VENKATESHWARA UNIVERSITY
14. SV HIGH SCHOOL
15. SG ARTS COLLEGE

scale | 0 250 500 1,000 1,500 2,000 2,500 Meters

CITY PROFILE | DEMOGRAPHICS

Tirupati Municipal Corporation Area | **27.44** sq.km

population density **14000** PEOPLE/SQ.KM

YEAR 2015

POPULATION **3,74,260**

MALE POPULATION **1,87,931**

FEMALE POPULATION **1,86,931**

21 lakh (AVERAGE FLOATING POPULATION) **PILGRIMS PER MONTH**

AGE-WISE DISTRIBUTION OF POPULATION

34% **57%** **8%**

LITERACY RATE **86%**

29.9% **1.12 lakh** population live in slums

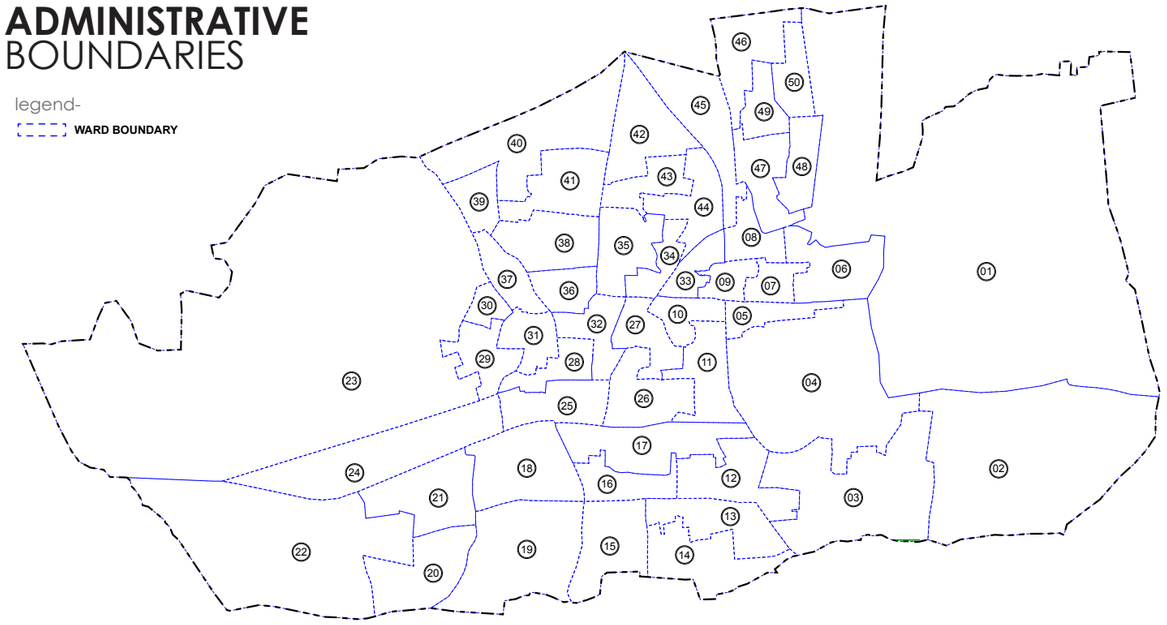
SLUM POPULATION

REGIONAL CONTEXT & CITY PROFILE

ADMINISTRATIVE BOUNDARIES

legend-

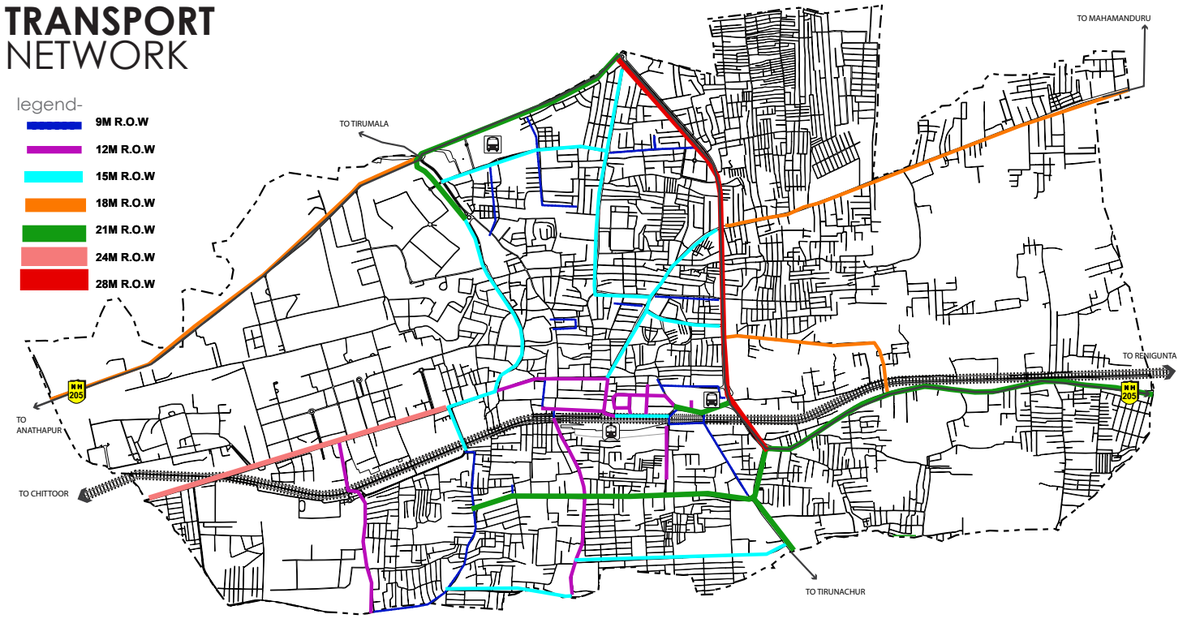
WARD BOUNDARY



TRANSPORT NETWORK

legend-

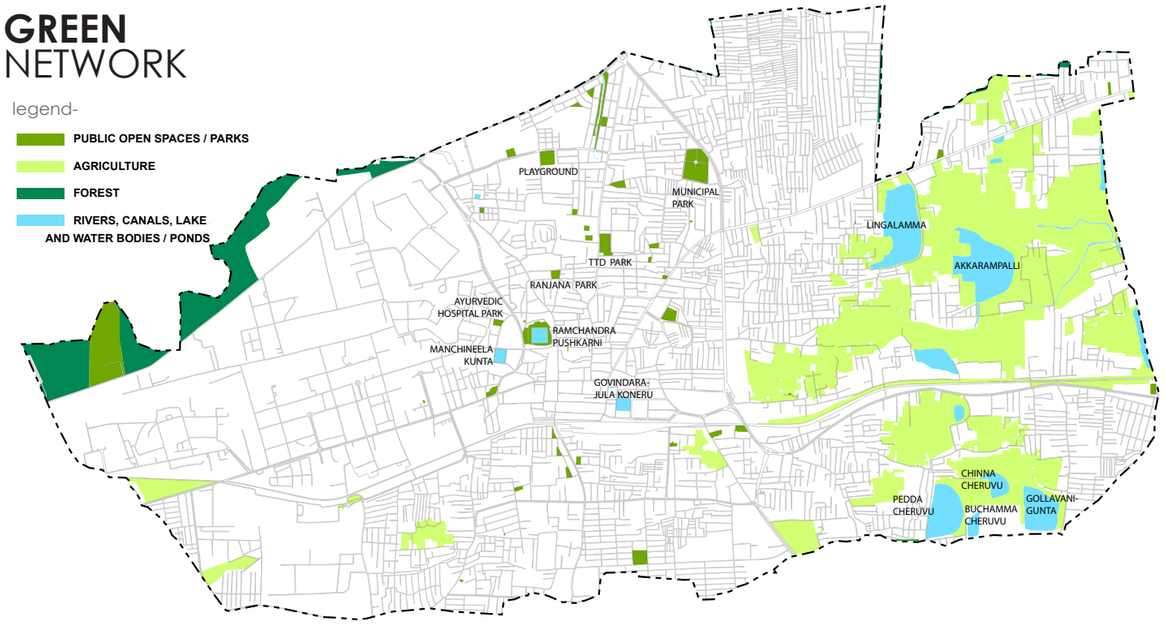
- 9M R.O.W
- 12M R.O.W
- 15M R.O.W
- 18M R.O.W
- 21M R.O.W
- 24M R.O.W
- 28M R.O.W



GREEN NETWORK

legend-

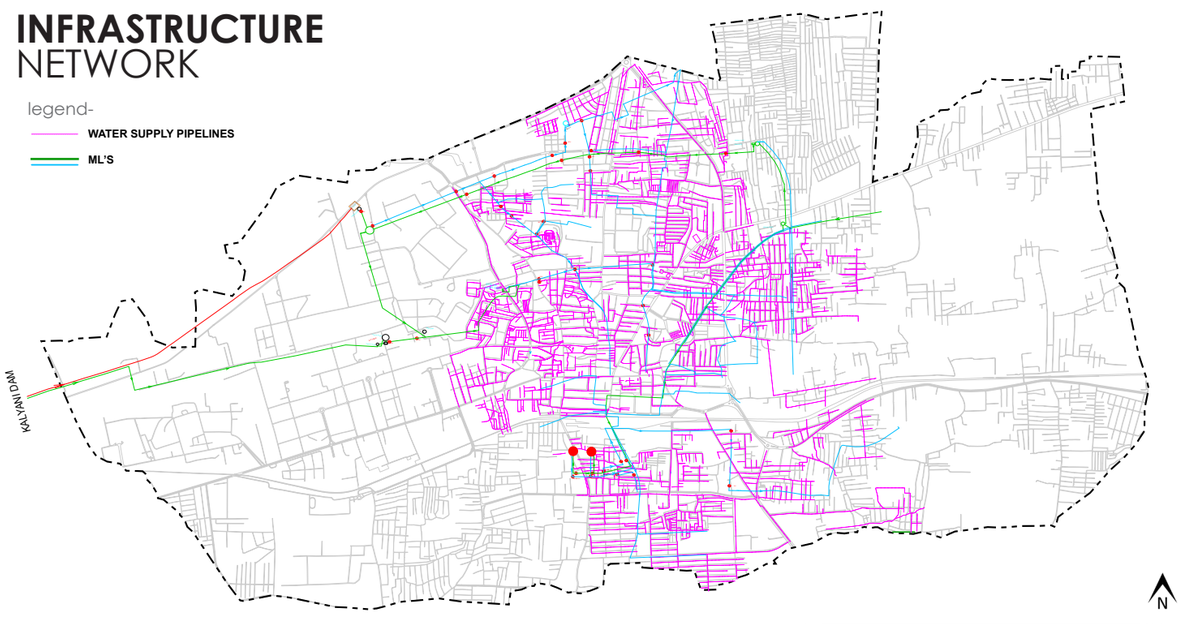
- PUBLIC OPEN SPACES / PARKS
- AGRICULTURE
- FOREST
- RIVERS, CANALS, LAKE AND WATER BODIES / PONDS



INFRASTRUCTURE NETWORK

legend-

- WATER SUPPLY PIPELINES
- ML'S



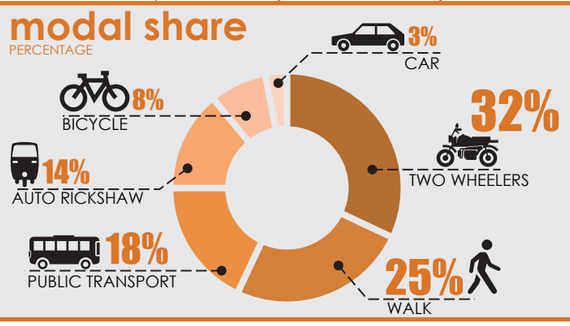
N

scale | 0 250 500 1,000 1,500 2,000 2,500 Meters

CITY PROFILE | MOBILITY, EDUCATION, OPEN SPACE & INFRASTRUCTURE

modal share

PERCENTAGE



439 km OF ROAD NETWORK

13% ROAD NETWORK WITH FOOTPATH

40% COVERAGE OF SEWER CONNECTIONS

70.9% HOUSEHOLD WATER SUPPLY CONNECTIONS

ownership of two wheelers have increased by 2.3 times and car by 1.6 times

INCREASE IN PRIVATE VEHICLE OWNERSHIP **200%**

67 Municipal Schools
267 Private Schools
42 Junior Colleges
14 Major Universities/Colleges

% AGE AREA UNDER EDUCATIONAL INSTITUTIONS **38.5%**

Per person open space is only 0.39 sqm as against UDPFI guidelines of 10-12sqm /person

AREA UNDER PARKS & PLAYGROUNDS **0.1%**

A total of 9 natural lakes and 3 tanks in the city

AREA UNDER WATERBODIES **2.4%**

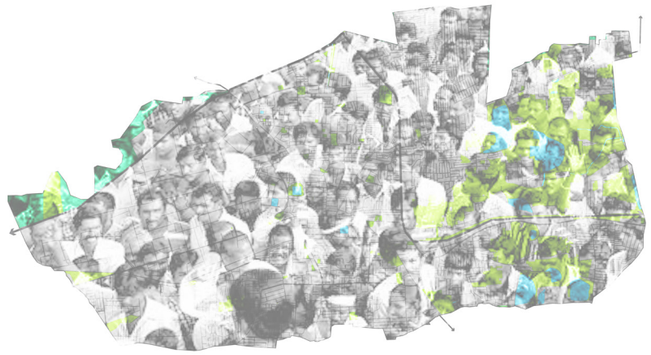
BASE MAP LAYERS & CITY PROFILE

CITIZEN CONSULTATION & STAKEHOLDER ENGAGEMENT

round 2 | 2016

ABOUT **64%** OF CITIZENS PARTICIPATED

2,39,000 CITIZENS INVOLVED



mygov मेरी सरकार **1.5 lakh** RESPONSES

LIKES **91,500**
TOTAL ENGAGEMENT **17.7 lakh**
TOTAL REACH **260 lakh**

1244 FOLLOWERS
36,321 IMPRESSIONS

The citizen engagement process was designed to capture diverse demographics, age groups, income levels and geographic locations in the city

14 Stakeholder Workshops

mygov मेरी सरकार
4 Discussions & polling

1,28,991 Vision & goals
1416 Gap assessment
17,420 Draft strategies
77% Voted in favor of Modifed TTC Boundary

1 Piligrim Survey
500 sample size
10 modules

4 Mentor Agency discussions

Regular site visits

understanding needs and aspirations of citizens & pilgrims along with identification of issues & possible strategies

KEY **STAKEHOLDERS** INVOLVED

PILGRIMS
Pilgrim Survey conducted to capture needs and aspirations of the large floating population.

SENIOR CITIZENS
Representatives from pensioners association, walking groups, retired government officials

DIFFERENTLY-ABLED PEOPLE
State and district PHC(JAC) members.

SELF-HELP GROUPS & NGOS
Representatives from MEPMA, Dwakra groups

LOCAL DEVELOPMENT COMMUNITY
Builders association, developers, MCT engineers,architects, city planners,vastu consultants

ENVIRONMENT
Representatives from forest department,pollution department, social groups

EDUCATION
Faculty and management from schools(Pvt. & public), colleges,Universities, education officers

HEALTH CARE SYSTEM REPRESENTATIVES
Doctors from public hospitals and private hospitals and clinics, medical university professors

HERITAGE
Representatives of various religious organizations such as ISKCON, Ramakrishna mission, Rama chandra mission, Bhrama kumaris, officials from TTD.

TOURISM
Officials from tourism office ,TTD and representatives from SV museum.

ECONOMY
Representatives from chamber of commerce, trade unions, shopkeepers association

DISCUSSION WITH VARIOUS DEPARTMENTS
Session with various departments for self assessment and for understanding the present status of the city such as
- Engineering department, Planning department, Housing Department, MCT
- Police Department,TirupATI
- APSPDCL Department

DISCUSSION WITH MENTORING AGENCIES
Collaborating with different departments and mentoring agencies like World Resources Institute(WRI), Auroville on the gap assessment & to arrive at strategies for ABD and Pan-City Proposal

DISCUSSION WITH ELECTED REP. & EXPERTS
Discussions with planners, service providers, sector experts were carried out –
ELECTED REPRESENTATIVES & CITY ADVISORY FORUM (MPs, MLAs, MLCs), TOWN PLANNERS (TUDA), INDUSTRY PARTNERS (FICCI, CII, NASSCOM)

CITIZEN CONSULTATION & STAKEHOLDER ENGAGEMENT

round 1 | 2015

2,00,000 citizens involved

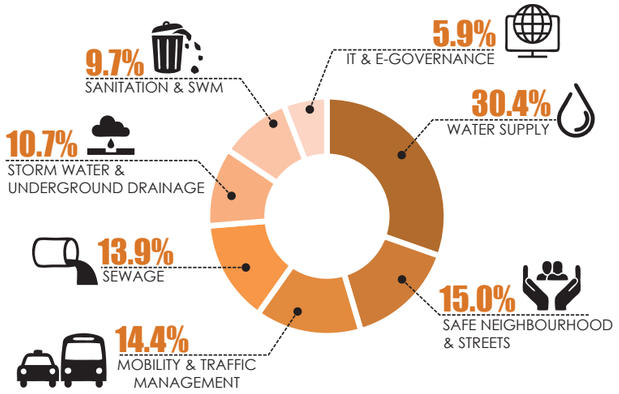
CITIZEN OUTREACH
- TV BROADCAST **1 month scrolling**
- BULK SMS **98,000**
- PAMPHETS **1,50,000**
- HOARDINGS **20 locations**
- PRINT MEDIA **twice a week**
- LOCAL RADIO **1 week**

CONTESTS
- ESSAY WRITING **1,072** submissions
- LOGO DESIGN **32** submissions

SOCIAL MEDIA
- FACEBOOK PAGE **4952** likes
- TWITTER **125** followers
- WHATSAPP FEEDS **545** messages
- EMAIL **194** messages
- YOUTUBE **24,639** views
- MYGOV.IN Discussions **25,549** responses; polling **3,845**
- MCT Website **1,18,277** Hits

CITIZEN CONSULTATION
- WARD-LEVEL CONSULTATION **18000** participants, **50 WARDS** — Covered about 20% of households of the city
- IVRCL CALLS (FEEDBACK) **22500** calls, **1000** voicemails — 4925 RESPONSES
- STAKEHOLDER CONSULTATION **12** workshops, **150** participants
- STUDENTS & FACULTY INTERACTION **30,400** particpants, **8** Engineering colleges, **1** PG & Polytechnice college

PRIORITY AREAS OUTCOME
(ROUND - 1 | 2015 CONSULTATION)



MYGOV & STAKEHOLDER DISCUSSIONS
(ROUND - 2 | 2016 CONSULTATION)

"A CLEAN CITY IS THE GATEWAY OF A SMART CITY."

"WORLD DEVOTIONAL HUB FOR HUMAN COMMUNITY"

"PROTECTION OF EVERY PILGRIM, TOURIST OR TRAVELLER TO TIRUPATI"

"IMPROVED ACCESSIBILITY"

"MAKE THE WAY AS EASY AS POSSIBLE SO THAT PERSON OF ANY AGE CAN TRAVEL EASILY"

"SET UP A CITY STUDIO TO PRESENT THE CITY IN ITS PAST GLORY THROUGH PERIODIC EVENTS"

"VIDYA-VAIDYA: TIRUATI AS THE EDUCATION AND HEALTH HUB FOR NAVYA AP"

"PLASTIC FREE CITY"

"TIRUPATI AS A HUB OF PREVENTIVE MEDICINES"

"HERITAGE CONSERVATION, PRESERVATION OF LAKES & TANKS"

"PROMOTING NON-FORMAL EDUCATION & VALUE BASED LEARNING IN SCHOOLS FOR BUILDING A STRONG FOUNDATION AND ALL-ROUND DEVELOPMENT OF CHILDREN"

PILGRIM SURVEY RESPONSES
(ROUND - 2 | 2016 CONSULTATION)

PUBLIC TRANSPORTATION AND TRAFFIC MANAGEMENT

IMPROVEMENT IN HEALTH FACILITIES & PROVIDING INFORMATION SIGNAGES IN THE PUBLIC SPACES

DRINKING WATER FACILITIES & SANITATION RECREATIONAL PLACES

COMPOSITE OF ROUND-1 (2015), ROUND- 2 (2016) CITIZEN CONSULTATION & CITY PROFILE

broad themes emerging

CLEAN & GREEN CITY

PRESERVATION OF WATER BODIES & FORESTS

CENTER FOR SPIRITUAL LEARNING, ARTS & CULTURE

A CITY WITH ACTIVE LIFESTYLE CHOICES

OPTIMUM USE OF LAND RESOURCE

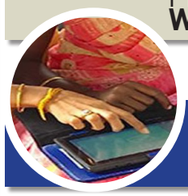
ENHANCED EXPERIENCES FOR PILGRIMS

PEDESTRIAN FRIENDLY CITY WITH MOBILITY CHOICES

SAFE & DISABLE FRIENDLY STREETS

GREEN INFRASTRUCTURE & IMPROVED CITIZEN SERVICES

PROMOTING WOMEN EMPOWERMENT

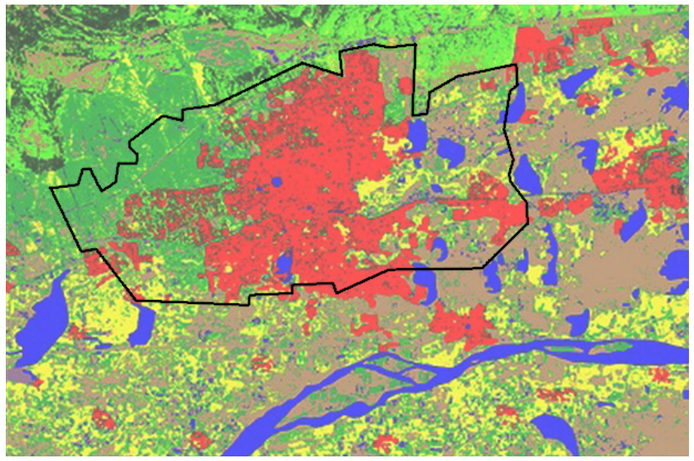


INNOVATION & SKILL DEVELOPMENT

AIR QUALITY OF TIRUPATI

CO2 emmission levels

Pollutants (less than one micron) like arsenic, beryllium, nickel, lead, manganese etc. have been found in the ambient air of Tirupati. 82% of particulate pollution in urban areas comes from vehicular emissions and road dust.
- Research Paper by Y.V. Rami Reddy



CALCULATIONS-

For the above mentioned purpose, the approach considers a sample area of 125 sq.km comprising of forests (15.15sq.km), city built-up area, agriculture land, water tanks, soil.

The total carbon produced is based on per capita CO2 footprint of India for 2015 (1.8t). This is equated with the Municipal Corporation of Tirupati population of 3,74, 260 which totals to 6,73,668 Tonnes of CO2. (Trends show an increase of 5% per annum)

No of trees per Acre of Tropical Forests = 454

No of trees in 15.15 sq.km of Forests = 16,99, 613

Carbon offsetting per tree = 22.6 kgCO_2E/ year

Total Carbon offsetting per Annum = 3,84,11, 252 kg CO_2E = 38,411.25 Tonnes of CO_2E

In order to make Tirupati Carbon Neutral an additional **485 acres of forest land** is required, which equates to about **2,20,190 trees** by year **2027**

A portion of this will be achieved through plantation of trees and creation of parks in the Tirupati Town Center (TTC) area through the larger initiative of Aadhaara Vriksha

Green cover to act as a 'Carbon Sink' for CO2 absorption and aiding in climate change mitigation at the city level

PROJECT Aadhaara Vriksha
'Aadhaara' - Power of Sustainii
'Vriksha' - Tree

(The calculation takes into account CO_2 emission reduction through Energy Efficiency, Renewable Energy and Non-Polluting Transport)

VISION, STRATEGIC BLUEPRINT , GOALS & PROJECTS

sustainability chart for tirupati

CITIZEN ENGAGEMENT

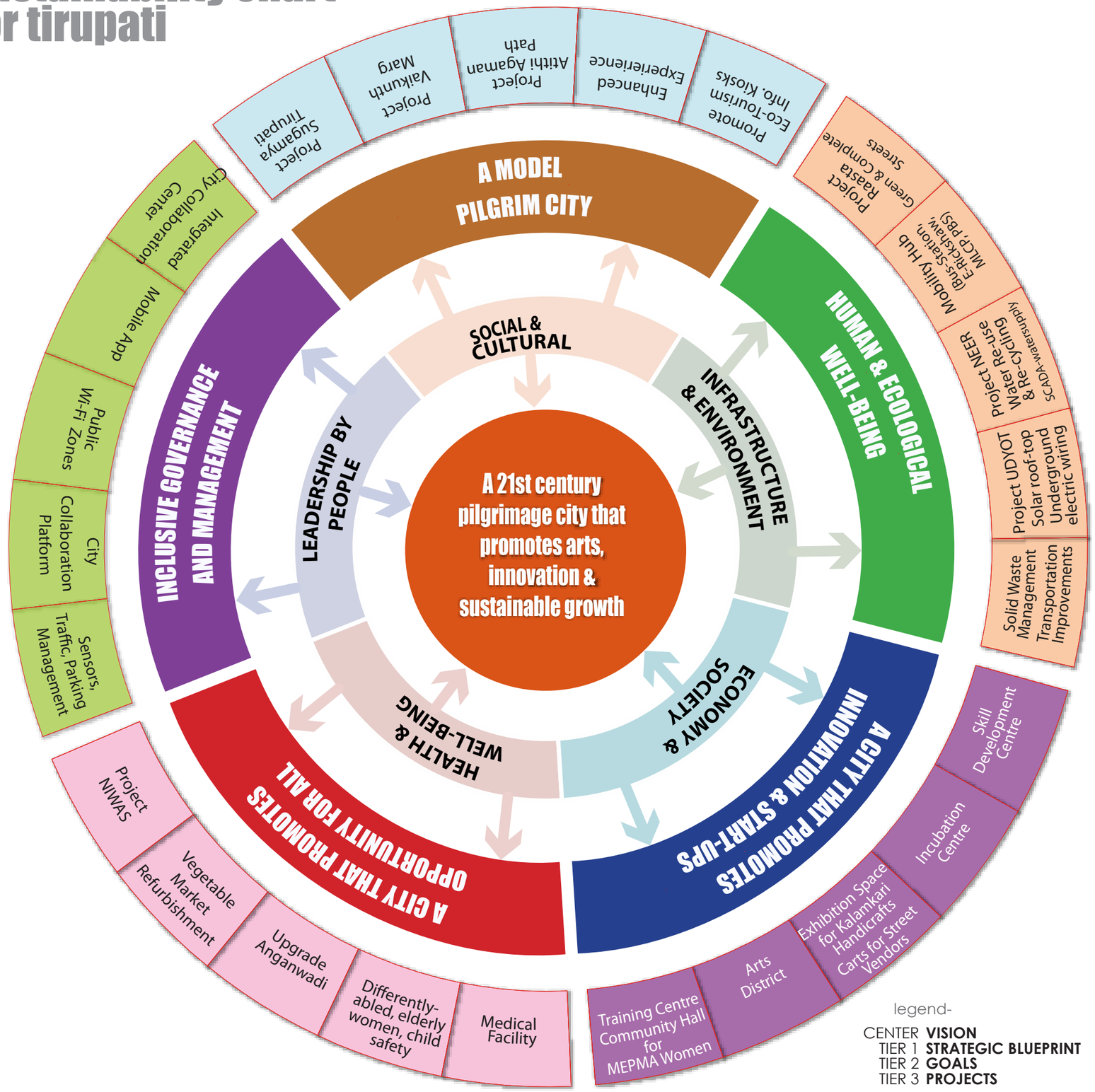
Public Transportation
Traffic Congestion
Spiritual Center
Safety on Streets
Education hub
Clean & Green Tirupati
Value Based Learning
Safety on Streets
Pilgrim friendly city
Women Empowerment

SWOT ANALYSIS

Mixed Land-Use
traffic congestion
Slum Re-development Initiatives
unexplored tourism potential
Natural Heritage
prone to flooding
Education hub
peripheral growth
Religious Center
weak public transport system
Best Heritage City for 2012
degrading air quality
Art, Dance, Literature & Culinary Institutions
Health & Educational Hub
absence of quality pedestrian environemnt
Social Sector Stewardship
Model Pilgrim City
pressure on infrastructure due to high floating population
Renewable Resources

CITY PROFILE

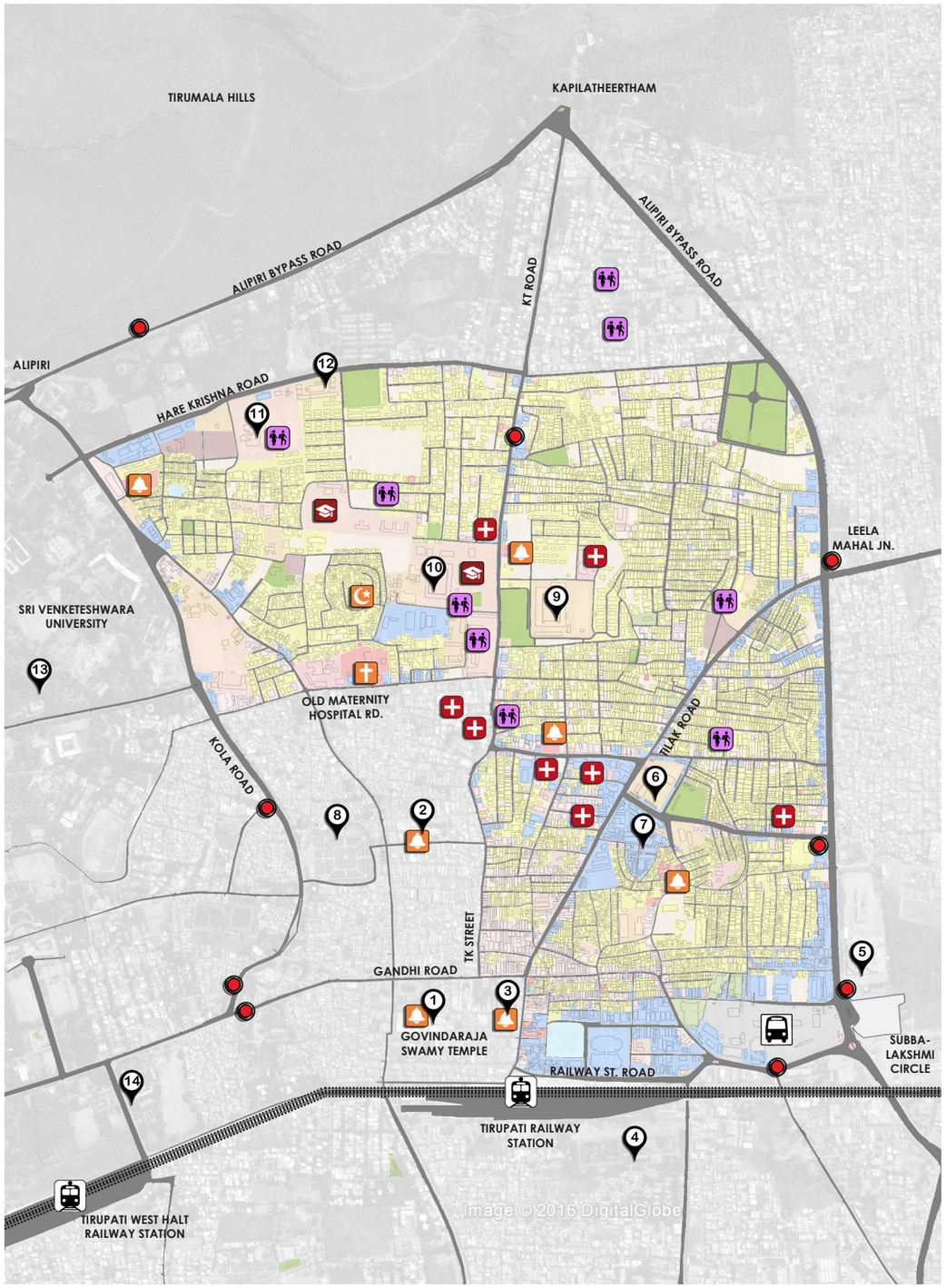
Total Road Network 225 kms
200 CCTV cameras at 39 locations
NMT share 33%
SWM services 60%
Coverage of Sewrage Network 37.6%
21 lakh pilgrims per month
475 buses carry 40,000 pilgrims daily to Tirumala
Coverage of Water Supply Connections 70.87%
100% coverage of power supply
Road Network with Footpaths 13%



legend-
CENTER **VISION**
TIER 1 **STRATEGIC BLUEPRINT**
TIER 2 **GOALS**
TIER 3 **PROJECTS**

TIRUPATI TOWN CENTER (TTC)

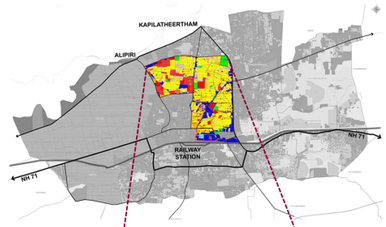
existing structure plan

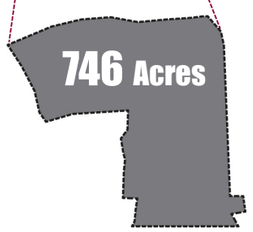


legend-

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- MIXED USE
- EDUCATIONAL INSTITUTES
- HOSPITAL & HEALTH INSTITUTIONS
- RELIGIOUS
- OFFICES
- PUBLIC BUILDINGS & UTILITIES
- VACANT LAND
- TRANSPORT LAND
- PARKS
- SCHOOLS
- HOSPITALS
- RELIGIOUS BUILDINGS
- COLLEGES
- EXISTING BUS STOPS
- BUS TERMINAL
- RAILWAY STATION
1. GOVINDARAJA SWAMI TEMPLE
2. KANDANDA RAMA SWAMI TEMPLE
3. KONERU
4. GOVINDRAJA CHOULTARIES
5. SRINIVASA PILGRIM CENTER
6. MUNICIPAL CORPORATION TIRUPATI
7. MUNICIPAL VEGETABLE MARKET
8. NARASIMHA TEERTHAM
9. TTD BHAVAN
10. SV POLYTECHNIC COLLEGE
11. KENDRIYA VIDYALAYA
12. ISKON TEMPLE
13. SRI VENKATESHWARA UNIVERSITY
14. SV HIGH SCHOOL
15. SV ARTS COLLEGE

AREA & DEMOGRAPHICS





TTC

AREA BASED DEVELOPMENT

TIRUPATI TOWN CENTER

1.12 lakh

TOTAL TTC POPULATION

Area Profile

11% of MCT area

17 Wards

MALE POPULATION **58,240**

FEMALE POPULATION **53,760**

28592 TOTAL NUMBER OF HOUSEHOLDS

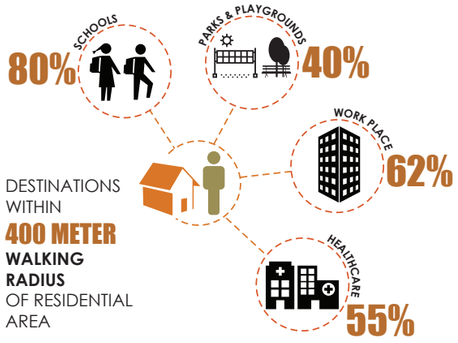
5180 SLUM DWELLERS

MOVEMENT & ACCESS

Accessibility

Total Road Network

80km



DESTINATIONS WITHIN **400 METER** **WALKING RADIUS** OF RESIDENTIAL AREA

URBAN FORM

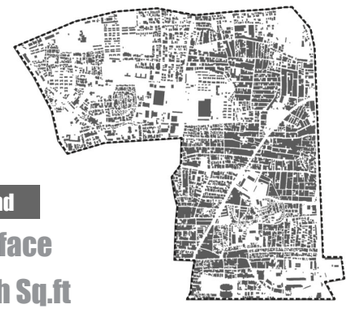
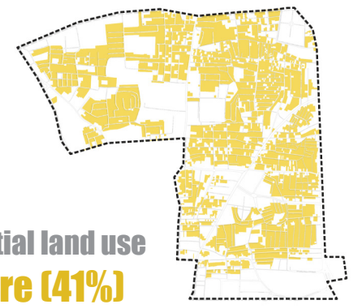


Figure ground

Built Surface

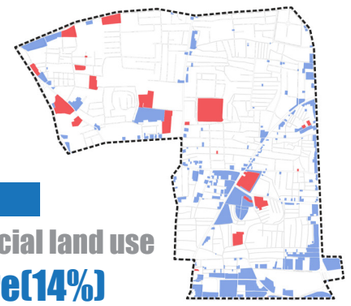
120 Lakh Sq.ft



Live

Residential land use

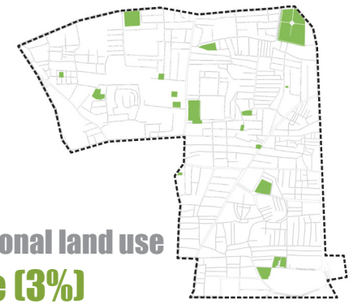
320 acre (41%)



Work

Commercial land use

112 acre(14%)



Play

Recreational land use

27 acre (3%)

EXISTING STRUCTURE PLAN & AREA PROFILE

TIRUPATI TOWN CENTER (TTC)

catalytic projects

01 | PROJECT ATITHI AAGMAN PATH

A 17 acre Retrofit project on PPP modal focusing on convenience of Pilgrims visiting the City

- **VAIKUNTH MARG**
Dedicated pedestrian connection between Railway Station & Bus Terminal with Pedestrian Bridge, Street Art & enhanced pedestrian environment

- **MULTI-MODAL TRANSPORT HUB**
Bus Station, E-rickshaw stands, PBS program, MLCP, Accomodation, Food Court & Retail, Public Amenities, Public Plaza, Medical Facility

- **ARTS DISTRICT**
Museum, Library, Performing Arts Center, Incubation Center, Skill Development Center, MLCP

02 | PROJECT RAASTA

Creating safe & sustainable environment by converting roads into streets

HARIT VEEDI
Green Street on 4.5 km stretch adressing Stormwater Management, pollution & Urban Heat Island Effect

HARE KRISHNA PROMENADE
Pedestrianisation of Hare Krishna Road (1.3 km) on weekends to accommodate walking and cycling, active outdoor functions bringing people on the streets and taking cars off the street

SHARED STREETS
A pilot project on 9.5 km of street length addressing pedestrian safety & movement of NMT on street

03 | PROJECT SUGAMYA TIRUPATI

To bring out the cultural heritage of Tirupati through its streets and provide directional ease for locating public amenities and religious landmarks within Tirupati Town Center (TTC). It also focuses on promoting tourism through information dissemination about the various natural and man-made assets of the City.

- CULTURAL SIGNAGE PROJECT | Wayfinding Signage
- CITY LEVEL TOOL KIT | Tourist maps & brochures
- TOURIST & PILGRIM INFORMATION KIOSKS

04 | PROJECT UNNATI

Promoting Inclusivity

- **REFURBISHING EXISTING VEGETABLE MARKET**
into a State of the art Nature's Bazaar with regularized vending & Handicraft market along with underground parking

- **DEVELOPING TIRUPATI STREET VENDING PLAN**
for Tirupati with dedicated hawker zones along streets & major public areas

- **UPGRADING EXISTING AANGANWADIS**
37 aanganwadis in ABD to be refurbished to provide vocational training to mothers

- **IMPROVING IT INFRASTRUCTURE IN MUNICIPAL SCHOOLS**
Upgrading Libraries & Computer Labs in 15 Municipal Schools of TTC

- **PROVIDING AMENITIES**
provision and upgradation of public toilets, provision of water ATMs

05 | PROJECT NIVAS

SLUM REDEVELOPMENT PROJECT
of 5.36 acreas of TMC Colony in Ward No. 33 on PPP model.

Rehabilitating **700** families through provision of affordable housing units

06 | PROJECT UDYAAN

Encouraging a healthy lifestyle amongst children

- Upgrading existing Municipal and Neighbourhood Parks with sports facilities like volley ball court, tottots etc.
- Adding 5 New Parks in Tirupati Town Center (TTC)
- sharing of schools parks/playground post school hours for public use
- Lake Restoration of CR Reddy Colony Pushkar & Public Realm improvement around Govindaraja Swamy Pushkar

07 | PROJECT UDYOT

Solar roof top installations to address 10% consumption through renewable energy

51,160 sqm of solar rooftops

SOLAR ROOFTOPS ON PUBLIC / SEMI-PUBLIC BUILDINGS

08 | PROJECT PARIVAHAN

- SMART BUS STOPS | 12 added
- BATTERY OPERATED BUSES
- E-RICKSHAW
- PUBLIC BIKE SHARING | 4.8km cycle tracks

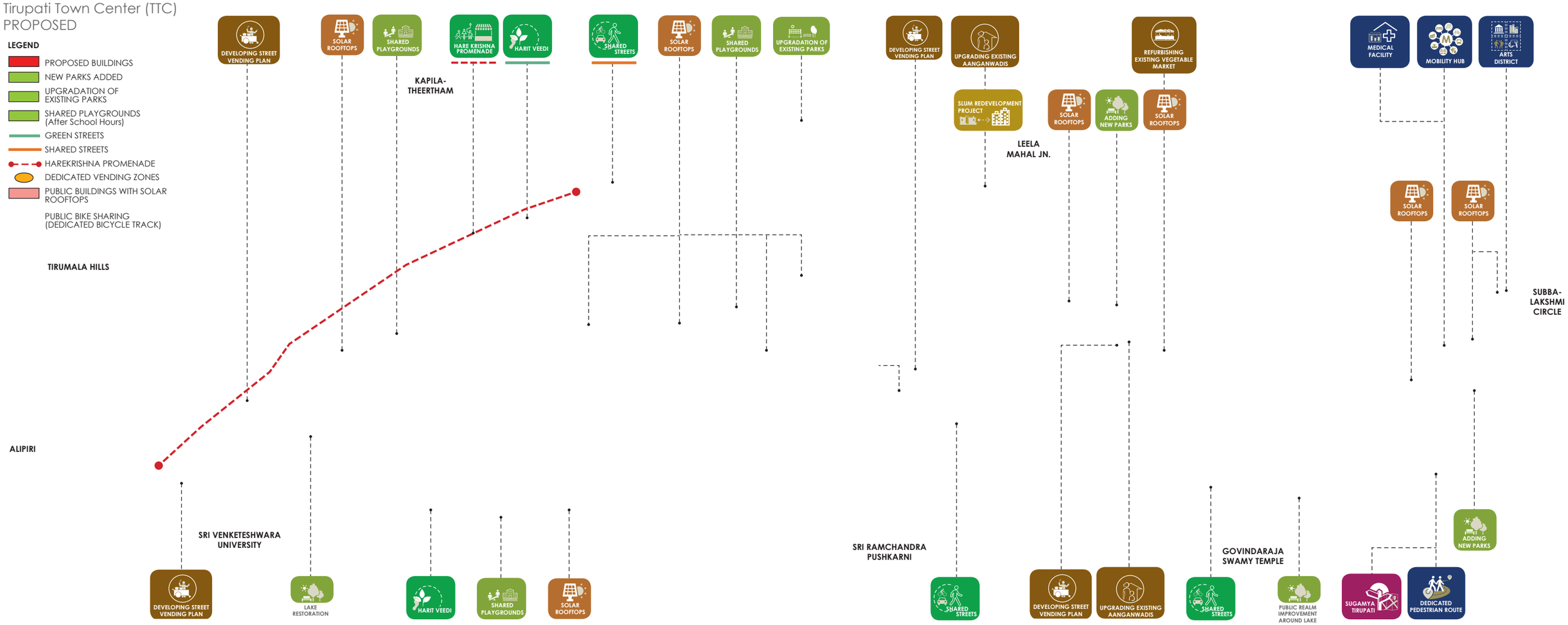
09 | PROJECTS ON INFRASTRUCTURE

PROJECT NEER
All infrastructure related to water supply, waste water and storm water management including SCADA and other technology interventions (dual piping not included)

PROJECT URJAA
All infrastructure related to conventional power supply and related smart technology interventions

SOLID WASTE MANAGEMENT
Addresses the reduction, reuse, recycling, and recovery of waste through technology and infrastructure upgradation of Solid Waste Management, and Construction & Demolition waste management.

Tirupati Town Center (TTC) PROPOSED

LEGEND

- PROPOSED BUILDINGS
- NEW PARKS ADDED
- UPGRADATION OF EXISTING PARKS
- SHARED PLAYGROUNDS (After School Hours)
- GREEN STREETS
- SHARED STREETS
- HAREKRISHNA PROMENADE
- DEDICATED VENDING ZONES
- PUBLIC BUILDINGS WITH SOLAR ROOFTOPS
- PUBLIC BIKE SHARING (DEDICATED BICYCLE TRACK)