

Smart city proposal – KOCHI



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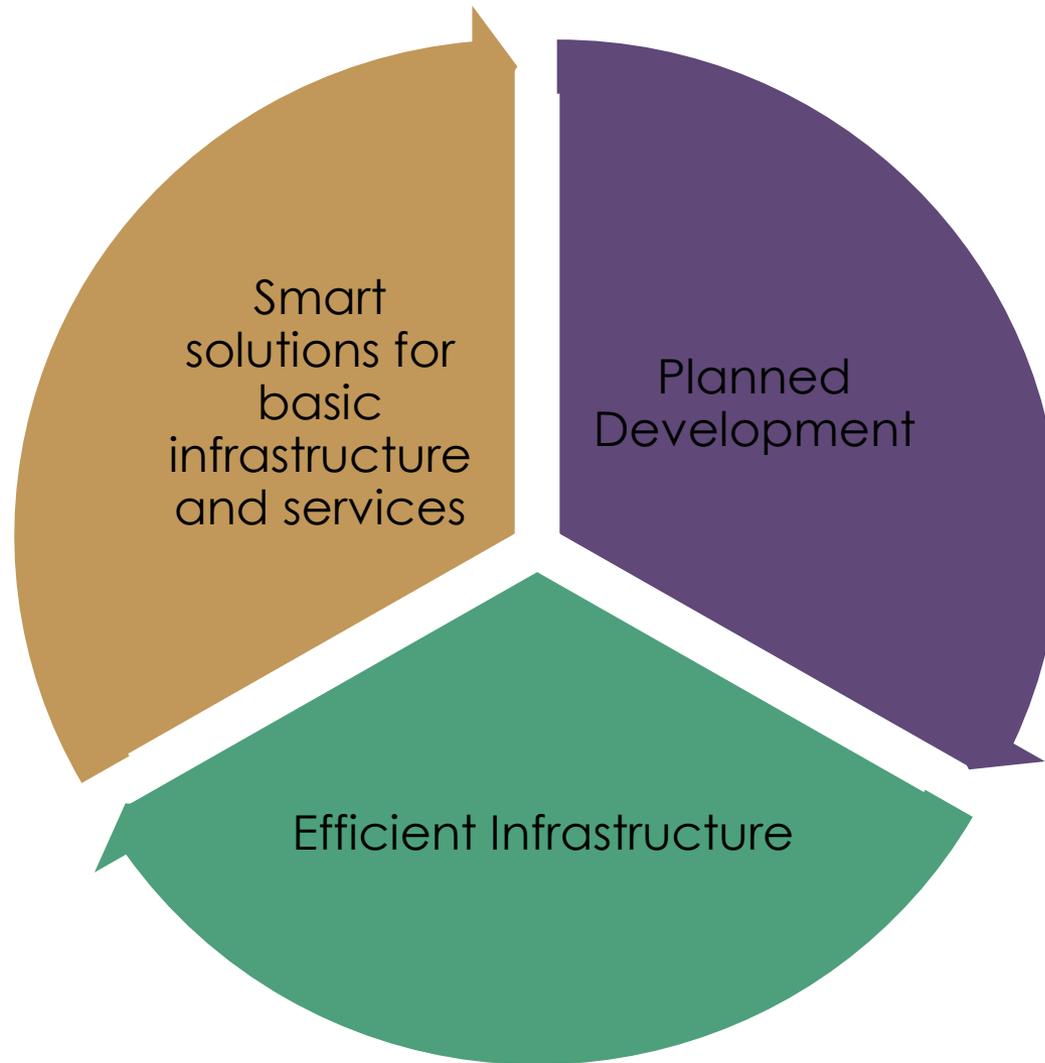
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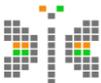


Smart city



Objectives of Smart city mission

- ❖ Provide Basic infrastructure
- ❖ Improved quality of life
- ❖ Clean and sustainable environment
- ❖ Apply Smart Solutions
- ❖ Set examples to be replicated both within and outside the Smart City and catalyze the creation of similar Smart Cities.



Smart Cities Mission Strategy

❖ Development Strategy

- Area Based Development
- Pan-city initiative

❖ Selection of Cities

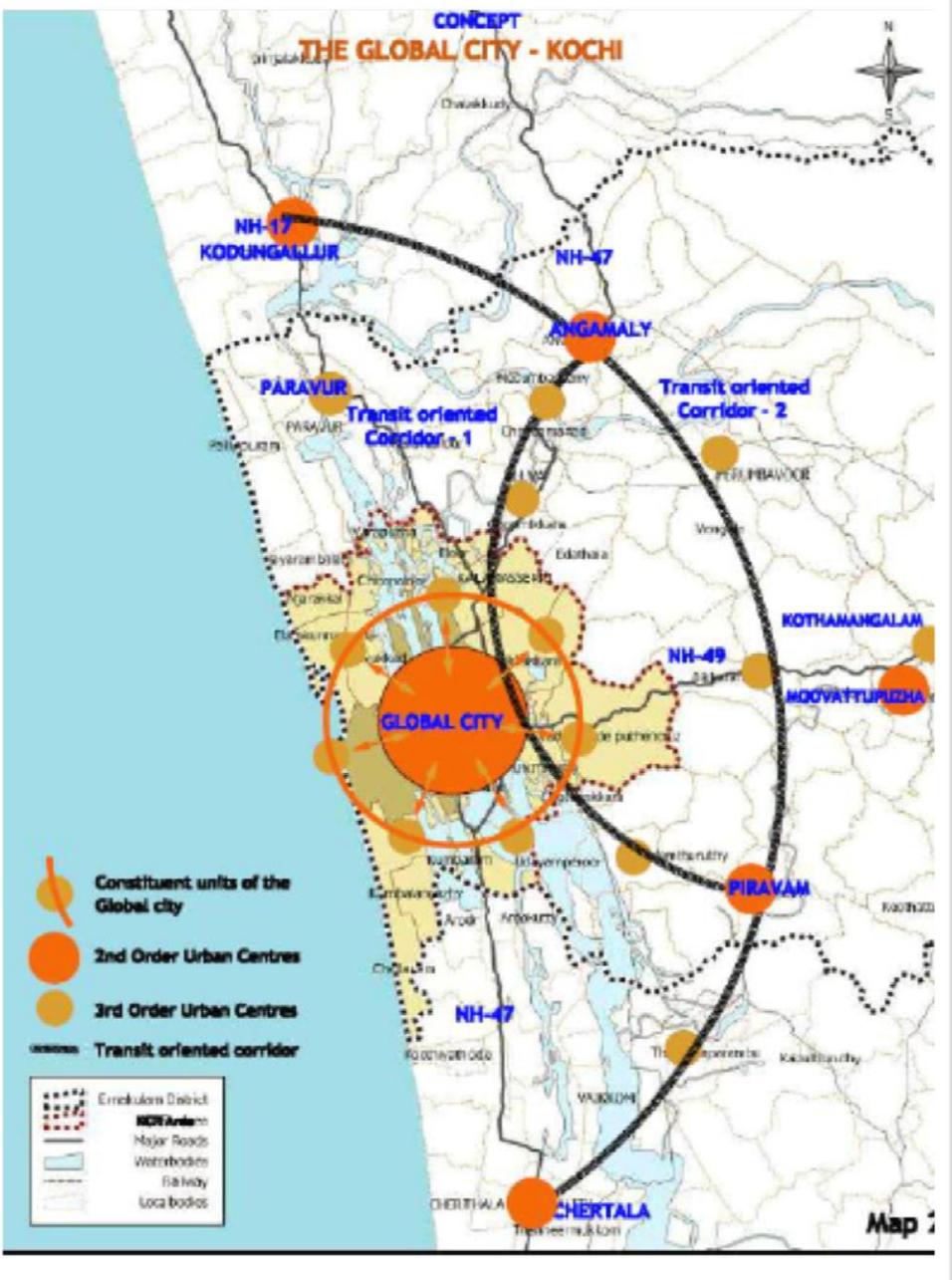
- Intra State and Inter-state Challenge
- Funding Pattern
 - Gol Grand: Rs.500 cr
 - State + ULB: Mini Rs.500 cr
 - Other sources- Convergence , PPP etc

❖ Implementation through SPV



KOCHI- Smart City Proposal





	Project Area	KMC
1	Geographical area	94.88 sqkm
2	Population	6,020,46
3	Literacy	85.6%

SWOT

STRENGTHS

- ❖ Unique Geography and Location
- ❖ HDI and social indicators
- ❖ Clean and sanitised city
- ❖ Port and Airport infrastructure
- ❖ Growing IT and services industry
- ❖ History of successfully executed Signature Projects
- ❖ Tourism hotspot and heritage
- ❖ Active Citizen Engagement
- ❖ Inclusive and Gender-sensitive development

WEAKNESS

- ❖ Land availability constraints
- ❖ Differential service levels across the city
- ❖ Constrained road network
- ❖ Poor walkability and street safety
- ❖ Inefficient integration of multi-modal transport systems
- ❖ Over-reliance on Grants
- ❖ Outward migration of educated population



SWOT

OPPORTUNITY

- ❖ Potential for multi-modal mobility
- ❖ Kochi Biennale
- ❖ Potential for development of pristine open spaces around canals
- ❖ Leverage the social base to expand employment generation

THREAT

- ❖ Increase in private vehicles
- ❖ Climate change
- ❖ Escalating cost of inputs to infrastructure creation
- ❖ Administrative Difficulties in Land Acquisition



Key sectors identified

- ❖ **URBAN TRANSPORTATION AND MOBILITY**
- ❖ **SOLID WASTE, SEWERAGE MANAGEMENT,
REJUVENATION OF WATER BODIES ESPECIALLY
CANALS**
- ❖ **PUBLIC SPACES/OPEN SPACES**
- ❖ **ECONOMIC OPPORTUNITY**
- ❖ **INTELLIGENT GOVERNMENT SERVICES**



Vision

“To transform Kochi into an inclusive vibrant city of opportunities with efficient urban services, sustainable growth and ease of living”



Goals

- ❖ **CONNECTED AND ACCESSIBLE CITY**
- ❖ **A CITY WITH VIBRANT IDENTITY**
- ❖ **CLEAN , GREEN AND HEALTHY CITY**
- ❖ **AN INCLUSIVE SMARTLY GOVERNED CITY**



Area Based Development

Option 2: Fort Kochi – Mattanchery

Area of direct impact : 6.9 km square

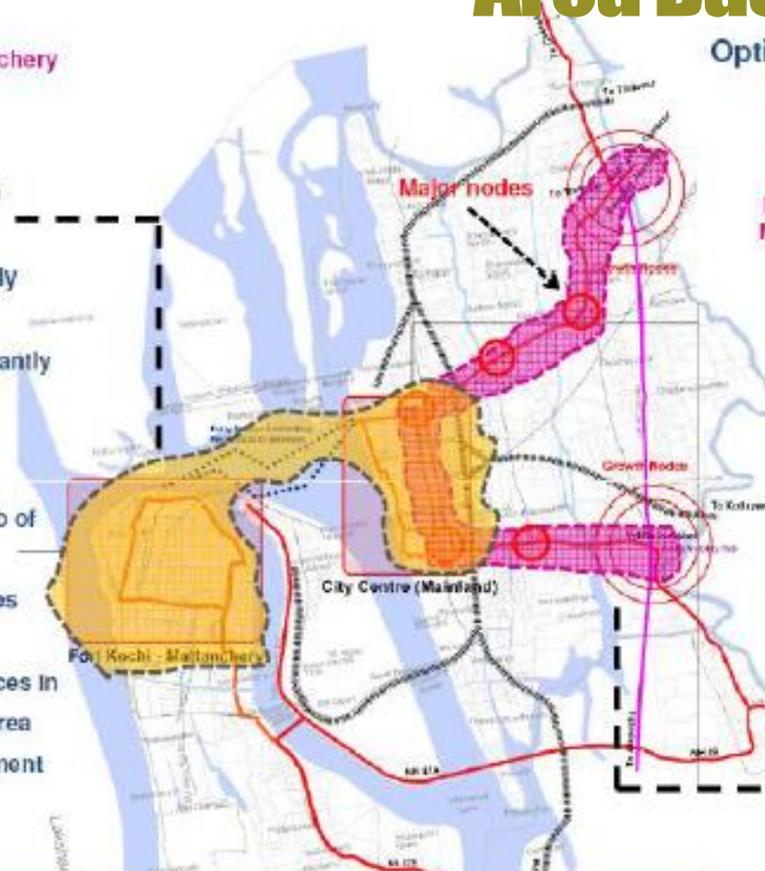
Population benefitted: 100,000

Land use:

1. Mattanchery : Predominantly residential (Urban poor population)
2. City Centre area: Predominantly Mixed

Significance of area:

- Reflects Heritage value
- Houses the commercial hub of Kochi
- Affected population includes large population of EWS
- Poor quality of urban services in Fort Kochi – Mattanchery area
- Scope for holistic development



Options considered for Area Based Development

Option 1: Transit Oriented Development between Vytilla Mobility Hub and Edapally via Metro Corridor (MG Road)

Area of direct Impact: 500m on either side of 25km main corridor

Population affected: approx. 75,000

Land use: Residential + Mixed along corridor

Significance of the area:

- Covers important junctions and nodes of the city
- Important city spine
- Scope for transit oriented growth and commercial development
- Along the Metro Corridor

Selection Parameter	Option 1	Option 2	Option3
	Retrofit of parts of West Kochi and Central City	TOD around Terminals including Vytilla, Edapally, MG Road	Integrated Intelligent Multi Modal Transport plan linking major modes from Fort Kochi to Edapally.
Alignment with Citizen Priorities and City Vision – 20%	15	10	7
Considerable Economic and Livelihood impact – 15%	10	10	5
Inclusiveness – 15%	15	5	10
Maximum impact wrt number of beneficiaries – 20%	15	10	10
Innovative and building on the unique strengths of the city – 15%	15	8	12
Readiness of plan/ projects – 15%	15	12	7
Area Score	85%	55%	51%



SIGNIFICANCE OF FORT KOCHI - MATTANCHERY



History and Image



Heritage Value



Canals and Green Cover



Tourism



Pluralistic Culture

ISSUES FACED BY FORT KOCHI - MATTANCHERY

Loss of Character

- i. Dilapidated Historic Buildings
- ii. Poor Heritage Management and Maintenance
- iii. Lack of Public Amenities for Tourists
- iv. Lack of strict Development Guidelines

Poor Standard of Living

- i. Dilapidated and Poor Housing structures
- ii. Absence of Sewerage System
- iii. Discontinuous and Limited Water Supply
- iv. Poor Sanitation and Health
- v. Lack of access to Quality Education

Mobility

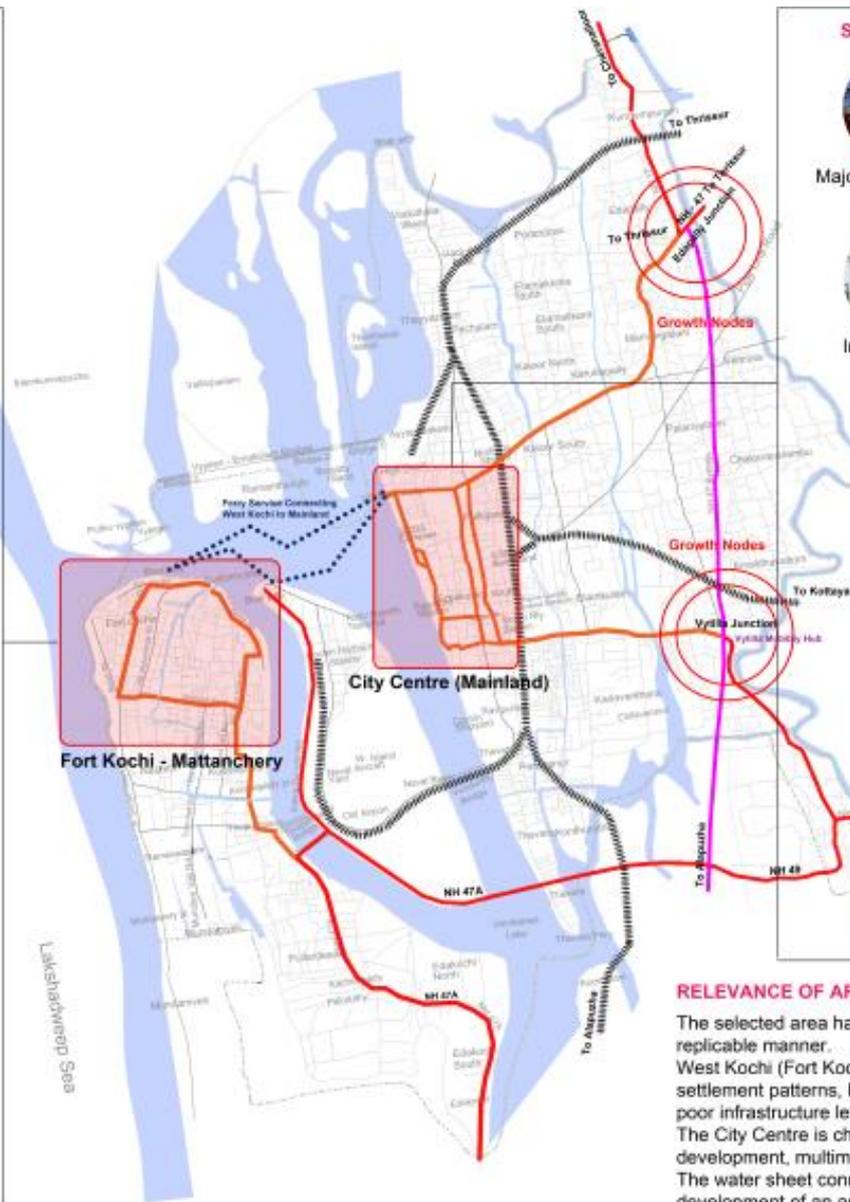
- i. Narrow Discontinuous Roads
- ii. Poor quality Road surfaces
- iii. Last mile connectivity issues

Urban Form

- i. Highly Dense Residential Area - Mattanchery
- ii. Degradation of Canals and Green Cover
- iii. Not Compact - Poor access to basic amenities

Safety and Security

- i. Petty Crimes
- ii. Drug Abuse



SIGNIFICANCE OF KOCHI CITY CENTRE



Major Transportation Grid



Heritage Value



City Promenade - Marine Drive



Institutional Hub



Commercial Hub

ISSUES FACED BY KOCHI CITY CENTRE

Mobility

- i. Poor Traffic Management
- ii. Poor quality Road surfaces
- iii. Large number of intersections
- iv. Poor Public Transport
- v. Last mile connectivity issues
- vi. Not pedestrian friendly

Standard of Living

- i. Lack of Sewerage System
- ii. Inconsistent quality of water
- iii. Poor solid waste management systems
- iv. Lack of Sanitation and Public Amenities

Urban Form

- i. Haphazard Development
- ii. Extreme Lack of Open Spaces
- iii. Degradation of Canals and Green Cover
- iv. Lack of Dedicated Walkways

Safety and Security

- i. Transport related safety issues
- ii. Lack of surveillance and monitoring
- iii. Delayed Emergency Response

RELEVANCE OF AREA SELECTION FOR SMARTCITY PROPOSAL

The selected area has potential to be developed in a wholistic and replicable manner.

West Kochi (Fort Kochi - Mattanchery) is characterised by multi-cultural settlement patterns, heritage hotspots, settlements of urban poor, poor infrastructure levels and a narrow road network.

The City Centre is characterised by commercial areas, mixed land use development, multimodal transport nodes and higher quality of life.

The water sheet connecting the 2 areas, brings about a unique setup for development of an area based Smartcity Proposal.



Demographics – Fort Kochi – Mattancherry – Central city area

Ward	Area (In Acres)	Households	Density (pph)	Population (2011)	Sex Ratio	Population 2021	Population 2031
Fortkochi	355	2,578	72	10,279	1106	10,739	11,333
Kalvathy	94	1,652	206	7,814	1107	8,205	8,615
Earaveli	43	1,282	367	6,425	1115	6,746	7,084
Karippalam	98	2,003	222	8,882	1037	9,326	9,792
Mattanchery	153	2,227	164	10,144	1015	10,651	11,184
Ekm South	385	1,741	38	5,941	1082	6,832	7,857
Ekm Central	394	2,131	55	8,734	1023	10,044	11,551
Ekm North	204	1,140	53	4,414	1091	5,076	5,838
Floating Pop + Indirect Beneficiaries				40,000 Approx.		51,627	62,984
Total	1,726	14,754	-	100,000 Approx.	-	119,300	136,238

Source: Census 2011



Key Issues in Central City

- ❖ **NARROW ROADS, TRAFFIC BOTTLENECKS AND CONGESTION**
- ❖ **LIMITED SEWERAGE ACCESS**
- ❖ **POLLUTED CANALS**
- ❖ **LIMITED OPEN SPACES, PARKING FACILITIES**
- ❖ **FRAGMENTATION OF LAND PARCELS AND HAPHAZARD DEVELOPMENT**
- ❖ **LACK OF LAND AVAILABILITY FOR NEW DEVELOPMENT**



Key issues in West Kochi

- ❖ **POOR HOUSING CONDITIONS**
- ❖ **LIMITED ACCESS TO BASIC SERVICES**
- ❖ **NARROW ROADS, LACK OF PEDESTRIAN FACILITIES AND ENCROACHMENTS**
- ❖ **POLLUTED CANALS/ WATER BODIES**
- ❖ **LACKS SCIENTIFIC SOLID WASTE MANAGEMENT**
- ❖ **LACKS SAFE & SECURE ENVIRONMENT FOR TOURISTS**



Key Components of ABD

1. SEAMLESS URBAN MOBILITY
2. RECONSTITUTION OF URBAN FORM & REJUVENATION OF NATURAL ELEMENTS
3. SMART URBAN SERVICES AND INCLUSIVE DEVELOPMENT
4. REVIVAL OF IDENTITY AND CULTURE
5. EMBEDDED SMART SOLUTIONS





1. SEAMLESS MOBILITY AND INTELLIGENT TRANSPORTATION NETWORK

Achieving seamless and safe mobility for pedestrians, bicyclists and vehicles via a green and smart transportation network, improved multi-modal transportation linkages, with smart last mile connectivity, world class roads, non-motorised and pedestrian friendly streets.

2. RECONSTITUTION OF URBAN FORM

Reviving the cities natural elements through rejuvenation of water canals and existing parks, creation of plazas and walkways along canals and green pockets, ensuring a greener tomorrow for Kochi.

3. REVIVAL OF IDENTITY AND CULTURE

Reviving the image of Fort Kochi as the Cultural and Heritage capital and that of the City Centre as a Commercial Hub will help restore the city to its former glory. Smart brand building and redevelopment of key areas will prove to be vital in achieving this.

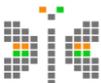
4. INCLUSIVE PLANNING

The city aims to achieve this by factoring in the needs of all its citizens belonging to various groups of society (vulnerable sections, differently abled etc.). Redevelopment of slum colonies ensuring access to quality basic services and amenities including education and health infrastructure is the goal. A barrier free environment will help transform Kochi into a sensitive city.



Seamless urban mobility

- ❖ ROAD-RAIL -WATERWAY LAST-MILE LINKAGE
- ❖ BOAT CONNECTIVITY
- ❖ NMT WITH ELECTRIC VEHICLE SYSTEM & PEDESTRIAN FRIENDLY WALKWAYS
- ❖ RE-DESIGNED ROAD NETWORK WITH NMT FACILITIES



TOWARDS A SMARTER KOCHI...



Developing a smart multimodal network with last mile connectivity via affordable and green para-transit modes of commutation with Smart Bicycle sharing system



Enhanced water transport Infrastructure (Boats & Jetty redevelopment)

Transforming spinal roads into eco-friendly corridors equipped with footpath on either side and dedicated bicycle lane



Developing all secondary roads as pedestrian friendly with bicycle sharing



No go zones for vehicles / complete pedestrianization

Enhancing walkability via connected pathways, FOBs, increased parks and green spaces and redevelopment of waterfront



Smart Parking and Smart Junctions



Barrier free city

Signage and Road markings



PRIORITY AREA: SEAMLESS MOBILITY AND INTELLIGENT TRANSPORTATION NETWORK

ACHIEVING SEAMLESS MOBILITY VIA GREEN AND SMART TRANSPORTATION NETWORK, IMPROVED MULTIMODAL TRANSPORTATION LINKAGES, WORLD CLASS ROADS, NON MOTORIZED AND PEDESTRIAN FRIENDLY STREETS.

Urban Form and Rejuvenated natural elements

- ❖ **TRANSIT-ORIENTED COMPACT MIXED USE DEVELOPMENT**
- ❖ **RE-DEVELOPMENT TO FREE LAND FOR OPEN AND PUBLIC SPACES**
- ❖ **REJUVENATING CANALS WITH GREEN WALKWAYS**
- ❖ **IMPROVED LANDSCAPING/CITIZEN AMENITIES AT NEHRU PARK**



TOWARDS A SMARTER KOCHI...



Rejuvenation of city canals

Redevelopment of existing parks and open spaces

Protection of green cover

Creation of green walkways, plazas, etc

Compactness: Mixed land use – Transit Oriented Development along all major roads



PRIORITY AREA: RECONSTITUTION OF URBAN FORM

REVIVING THE CITIES GREEN AND GLORY THROUGH REJUVENATION OF WATER CANALS, EXISTING PARKS, CREATION OF PLAZAS, WALKS ALONG CANALS AND GREEN POCKETS, ENSURING A GREENER TOMORROW FOR KOCHI.

Smart urban services

- ❖ **24*7 WATER SUPPLY**
- ❖ **ACCESS TO TOILETS**
- ❖ **100% SEWERAGE /SEPTAGE MANAGEMENT**
- ❖ **EFFICIENT SWD NETWORK INTEGRATED WITH CANALS**
- ❖ **DUCTING/UNDERGROUND CABLING**
- ❖ **HOUSING FOR ALL**

TOWARDS A SMARTER KOCHI...



Heritage and Tourism Master plan

Heritage Trail

Cultural centre for promotion of local art forms

Smart Branding

Smart amenities for tourists

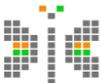


REVIVING THE IMAGE OF FORT KOCHI AS THE CULTURAL AND HERITAGE CAPITAL AND THAT OF THE CITY CENTRE AS A COMMERCIAL HUB WILL RESTORE THE CITY TO ITS FORMER GLORY. SMART BRAND BUILDING AND REDEVELOPMENT OF KEY AREAS WILL PROVE TO BE VITAL IN ACHIEVING THIS.

PRIORITY AREA: REVIVING IDENTITY AND CULTURE

Identity and culture elements:

- ❖ **REVIVAL OF HERITAGE - Fort Kochi-Mattancherry**
- ❖ **MARKET REDEVELOPMENT**
- ❖ **REJUVENATION OF PARKS AND PUBLIC SPACES, ETC.**
- ❖ **BRANDING KOCHI - BIENNALE**



TOWARDS A SMARTER KOCHI...



Reconstitution of shops and stalls

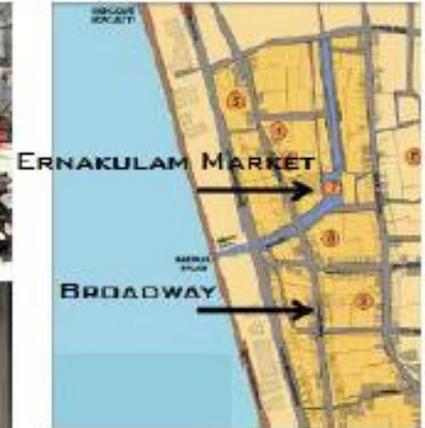


ERNAKULAM MARKET



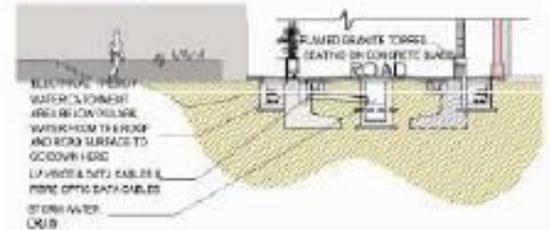
Transforming defunct market jetty into Market Canal Square

REDEVELOPMENT OF ERNAKULAM MARKET



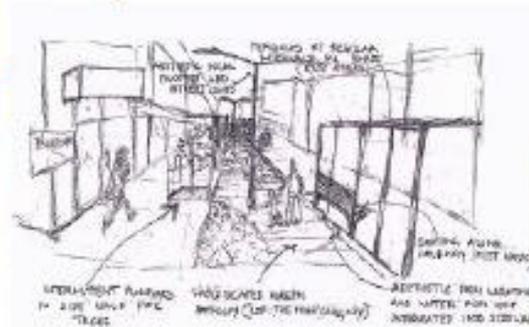
ERNAKULAM MARKET

BROADWAY



BROADWAY

Section of proposed footpath - Broadway

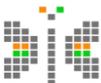


PEDESTRIANIZATION OF BROADWAY

PRIORITY AREA: REVIVING IDENTITY AND CULTURE

Embedded Smart Solutions

- ❖ **WIFI HOTSPOTS AND KIOSKS FOR PUBLIC SERVICES**
- ❖ **SMART TRAFFIC SIGNAL MANAGEMENT**
- ❖ **SMART METERING - WATER AND ELECTRICITY**
- ❖ **ENERGY EFFICIENT LIGHTING WITH MULTI-FUNCTIONAL SMART POLES**



Streetlight system & smart pole

❖ SOLAR BASED STREETLIGHT SYSTEM

❖ INTEGRATED MULTI-FUNCTIONAL SMART POLE

- Emergency response,
- Traffic monitoring,
- Intelligent street lamp
- Waste dumping
- Wifi hotspots
- Bus information



Pan City Initiatives



Pan City Initiatives -1

- ❖ Integrated delivery of Government-to-Citizen (G2C) services using **Smart Card** and **mobile platforms** in two phases

Phase 1: Extension of SMART Card payment solution from Transportation to all City Services

Phase 2: Development of an integrated mobile platform for Citizen Engagement and ubiquitous delivery of all G2C services



Kochi App

Transport Services

- Live train schedule
- Route map
- Fare details
- Integrated Mobile ticketing
- Location sharing

Infotainment

- Free Wifi
- Music/ video streaming
- Live cricket scores
- Restaurant search

City Information

- City calendar
- Weather forecast
- Tourist destinations
- Merchant Directory

M-commerce

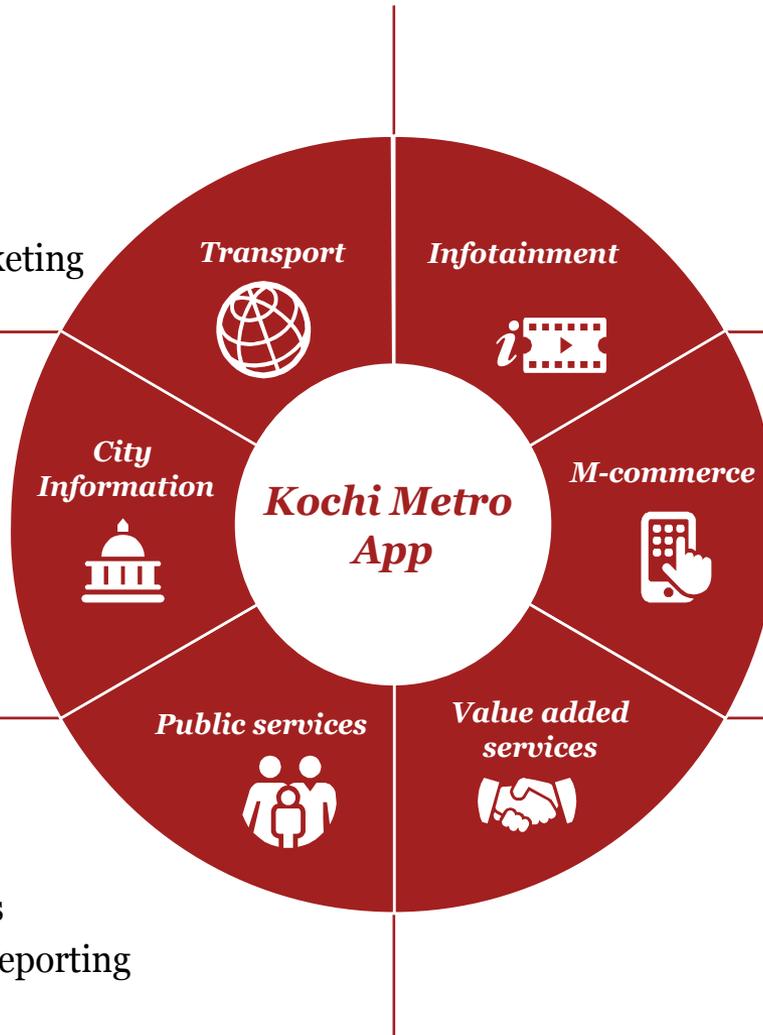
- Cab bookings
- Click & Collect
- Mobile recharge
- Bus/ train ticketing
- Hyper Local

Public services

- Emergency alerts
- Hospital speed dials
- Utility bill payments
- Suspicious activity reporting

Value added services

- Wallet services
- Concierge services
- Shared cab services
- Tourism services



Pan-city initiative -2

IMPLEMENTATION OF A INTELLIGENT WATER MANAGEMENT SOLUTIONS

- ❖ City-wide 24x7 supply covering
 - **GPS/GPRS-enabled meters for city-wide water connections to capture automated meter and citizen data on a centralized location**
 - **Efficient metering billing and collection solutions**
 - **Centralized command and control centre backed by efficient ICT infrastructure**



Project Budget

- ❖ **TOTAL PROJECT COST –Rs 207.6 Mn**
 - **Central Share – Rs 50Mn**
 - **State and ULB Share – Rs 57.7Mn**
 - **Convergence of schemes – Rs 50.5 Mn**
 - **Loans/PPP/External fund –Rs 49.4 Mn**



Potential areas of Collaboration

❖ TECHNOLOGICAL PARTNERSHIP

- Integrated Multi-modal Transport Network
- Heritage Conservation & Management
- Non Motorised Transport System
- Urban Form etc

❖ FUNDING PARTNERSHIP

- Loans
- Private investments



Thank You

