SHAPING INDIAN CITIES

Planning and design with smart city technologies

First Mentor: **Vincent Nadin**
Second Mentor: **Ulf Hackauf**
Research Group: **Complex Cities**

Delft University of Technology, Faculty of Architecture and the Built Environment
Department of Urbanism

Alankrita Sarkar
4510623

7th July 2017

PRESENTATION STRUCTURE

(What you can expect in next half an hour?)

- Indian Smart City Mission
- Smart City Concepts and Learnings from the World
- Planning and Design Strategies
- Project Conclusion & Recommendations

SECTION 1

(Focal Points)

Indian Smart City Mission

Need for Smart India | Challenges in India| Government Proposal | Approaches and Strategies

Smart City Concepts and Learnings from the World

Planning and Design Strategies

Project Conclusion & Recommendations

INDIA IS GROWING

(Urbanisation)

vehicular traffic

Image Courtesy: samaa.tv

LIKE THIS.

(Urbanisation)

market crowd

Image Courtesy: samaa.tv

LIKE THIS.

(Urbanisation)

delhi metro

Source: India Group Today

LIKE THIS.

(Urbanisation)

street market

Source: https://noisypilgrims.com/2013/05/15/busy-street-of-hyderabad/

NEED TO ADDRESS

(Inspiration)

Amsterdam

Source:http://www.worldfortravel.com/wp-content/uploads/2015/11/Amsterdam-City.jpg

THE URBAN EFFECT

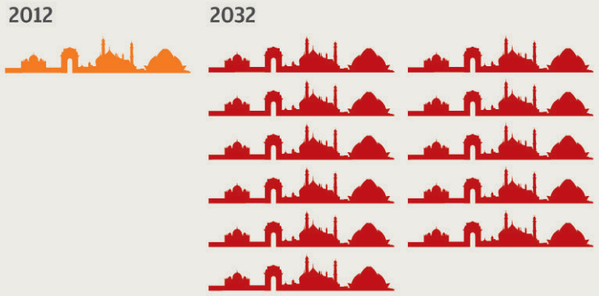
(Problems)

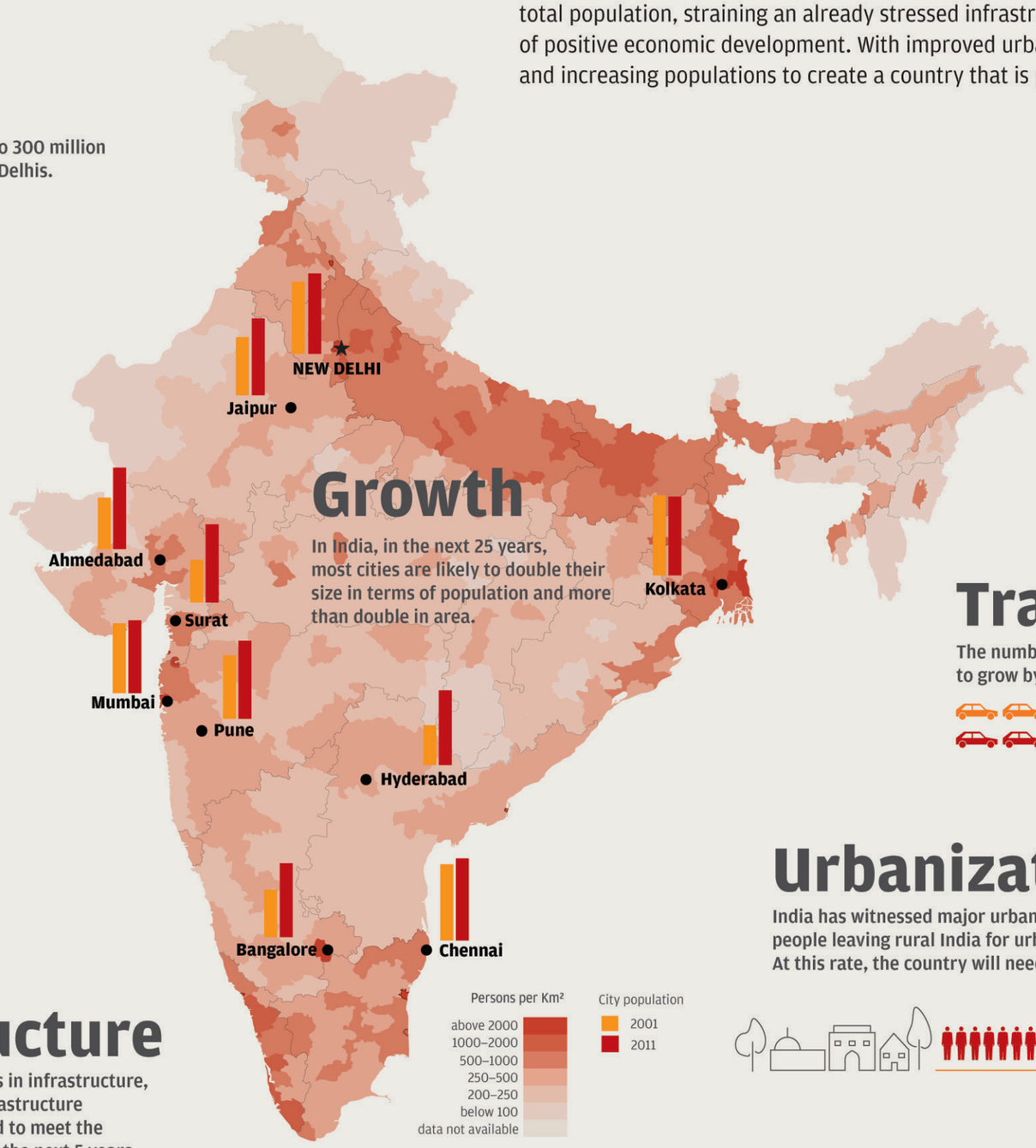
Sustaining Growth in India through Better Urban Planning

With a population of more than 1.2 billion, India is projected to be the world's most populous country by 2025. By 2050, it is estimated that India's urban population will constitute nearly half of the country's total population, straining an already stressed infrastructure. The good news: urbanization is an indicator of positive economic development. With improved urban planning, India can tackle urbanization challenges and increasing populations to create a country that is poised for sustainable growth.

Cities

In 20 years, India's cities will have to accommodate 250 million to 300 million more people than they do today. That's the equivalent of 11 New Delhis.





Pollution

1. CHINA
2. USA
3. INDIA

By 2015, India is expected to become the world's third largest emitter of carbon dioxide—it ranked fifth in 2005.

Electricity

Of the 1.4 billion people of the world who have no access to electricity in the world, India accounts for over 300 million.

Transportation

The number of private vehicles in India is expected to grow by more than 3 times by 2021.

2012
2021

Water

Only 74% of urban households in India are served by piped water supply. No Indian city has piped water 24 hours a day, seven days a week—4 to 5 hours of supply per day is the average.

Urbanization

India has witnessed major urbanization in recent times, with an estimated 30 people leaving rural India for urban areas every minute during the next 20 years. At this rate, the country will need some 500 new cities in the next two decades.

Infrastructure

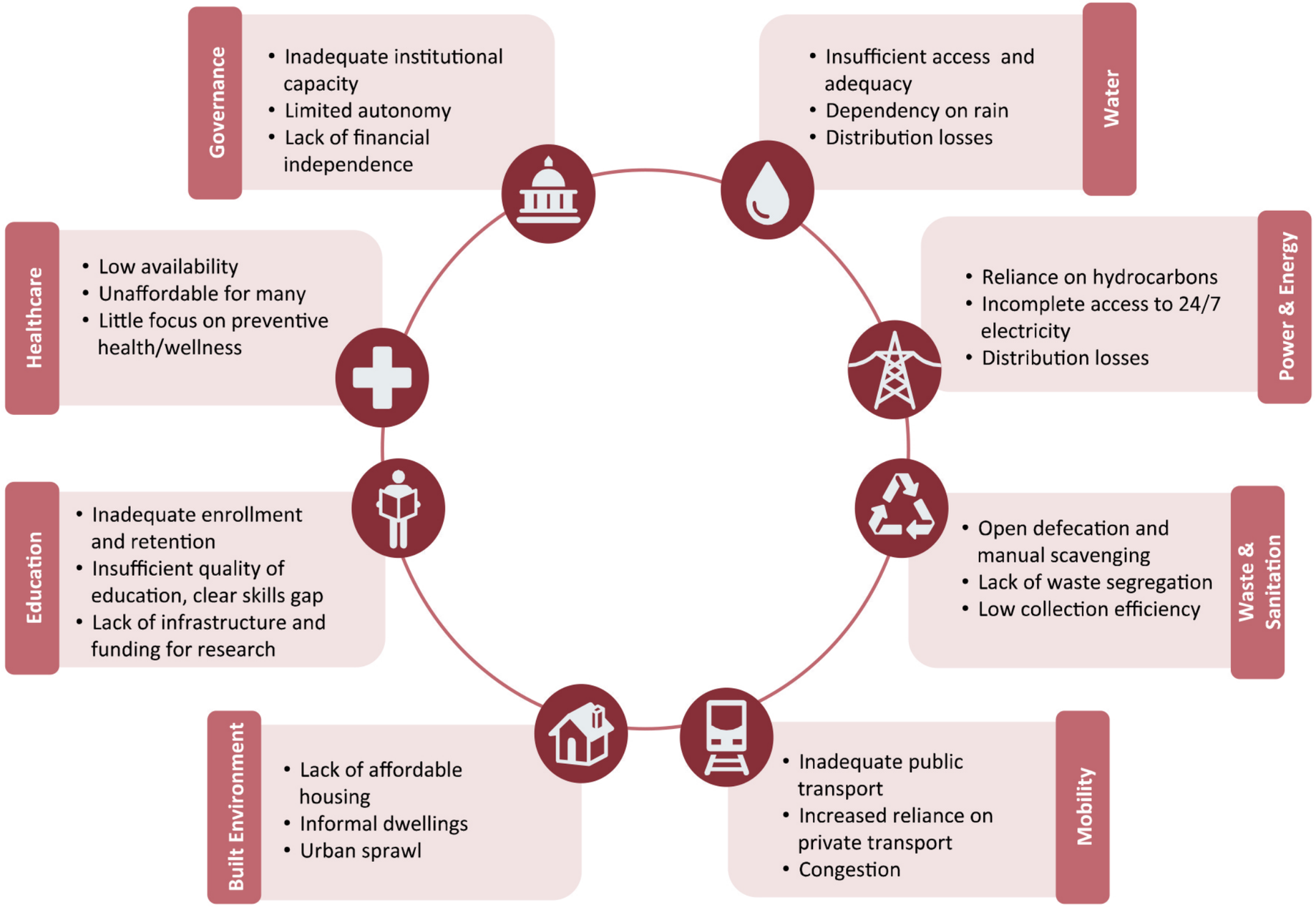
Despite increased investments in infrastructure, an estimated $1 trillion in infrastructure improvements will be required to meet the country's resource needs over the next 5 years.

For more information on how IBM is helping to build smarter, more sustainable cities visit: www.ibm.com/smartercities

IBM

WHAT TO ADDRESS?

(Challenges of Urban India)



Source: World Economic Forum, Shaping the Future of Urban Development and Service

HOW TO ADDRESS

(Indian Smart City Mission)

Proposed by: Ministry of Urban Development, Government of India
Proposed on: June 2015
Effective period: 30 years

live mint
25 October 2016 | E-Paper

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Home » Politics

Last Modified: Fri, Jan 29 2016. 10 10 AM IST

India launches its urban makeover plan with smart cities

Govt proposes to invest Rs50,802 crore on 20 cities under phase one of the plan to set up 100 smart cities

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813
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Pretika Khanna | Rihan Najib | Gyan Varma

The Smart Cities Mission, a pet project of Prime Minister Narendra Modi, was launched in June 2015 with the government releasing the guidelines and mission statement for the 100 smart cities project. Photo: Mohd. Zakir/HT

MORE FROM THIS SECTION

DMK says chief Karunanidhi unwell due to 'drug allergy'

New York Times prints 2-page list of Donald Trump's Twitter insults

New Delhi: The government on Thursday picked 20 cities, including five state capitals, to launch its larger urban makeover plan.

It proposes to invest Rs.50,802 crore on these cities, selected through a challenge, and is the first phase of the government's plan to set up 100 smart cities.

"For the first time in the country and perhaps in the world, investments in urban development are being made based on competition-based selection of cities," urban development minister M. Venkaiah Naidu told reporters on Thursday.

CNN Regions » U.S. | Africa | Americas | Asia | China | Europe | Middle East | Opinion

Cities of the future? Indian PM pushes plan for 100 'smart cities'

By Casey Tolan, for CNN
updated 2:21 AM EDT, Fri July 18, 2014

A rendering of the planned 'smart city' Dholera, in southern Gujarat, India. Prime Minister Narendra Modi has pledged to build 100 smart cities across the country.

STORY HIGHLIGHTS

- Indian Prime Minister Narendra Modi wants to build 100 "smart cities" outfitted with high-tech communication
- The government announced it's investing $1.2 billion over the next year, with more funding coming from private investors and abroad
- Some observers are skeptical that high-tech cities are the best course in a country where many lack basic infrastructure
- India isn't the only country jumping on the smart cities

(CNN) -- In an ambitious plan to upgrade urban India, Prime Minister Narendra Modi says he will build 100 "smart cities" -- cities outfitted with high-tech communication capabilities -- across the country.

"Cities in the past were built on riverbanks," Modi said in a June speech. "They are now built along highways. But in the future, they will be built based on availability of optical fiber networks and next-generation infrastructure."

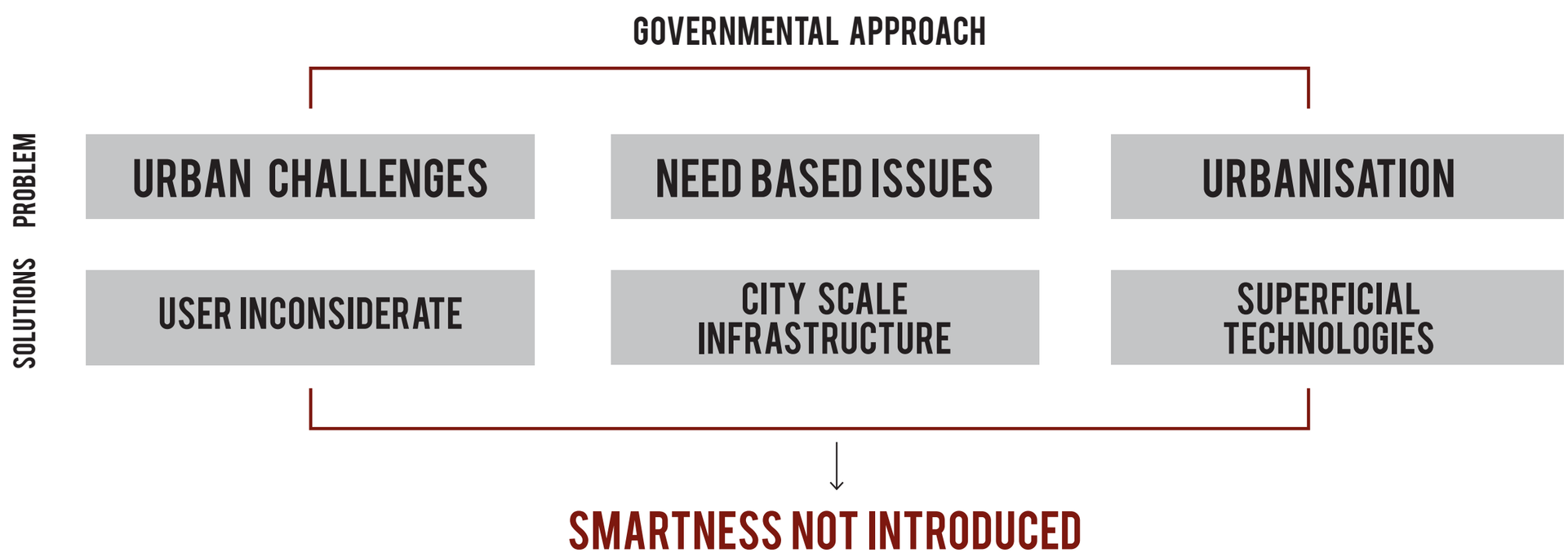
For Modi, who took office in May, building new cities is a way to deal with the country's rapidly urbanizing population while also competing with China, which has made smart cities a centerpiece of its own policies.

Smart City
MISSION TRANSFORM NATION

Mission Statement & Guidelines

INDIAN SMART CITY MISSION

(Approach)



Criticism: No appropriate definition for Indian smart cities. What are they aiming for?

RESEARCH QUESTION

(To find out?)

How can **global experience of smart city initiatives** and technologies be incorporated into the **Indian Smart Cities Proposal** to upgrade the **quality of urbanization** and **ground level interventions** on **diverse scales**?

1. Understanding of the ‘smart city’ concept
2. Smart cities interpretation in India?
3. Urbanization of Indian cities
4. Citizen engagement
5. Small-scale interventions for a smart city

SECTION 2

(Focal Points)

Indian Smart City Mission

Smart City Concepts and Learnings from the World

Universal concept of smartness | Conditional smartness | Smart applications | Developing Countries and India | Research Question

Planning and Design Strategies

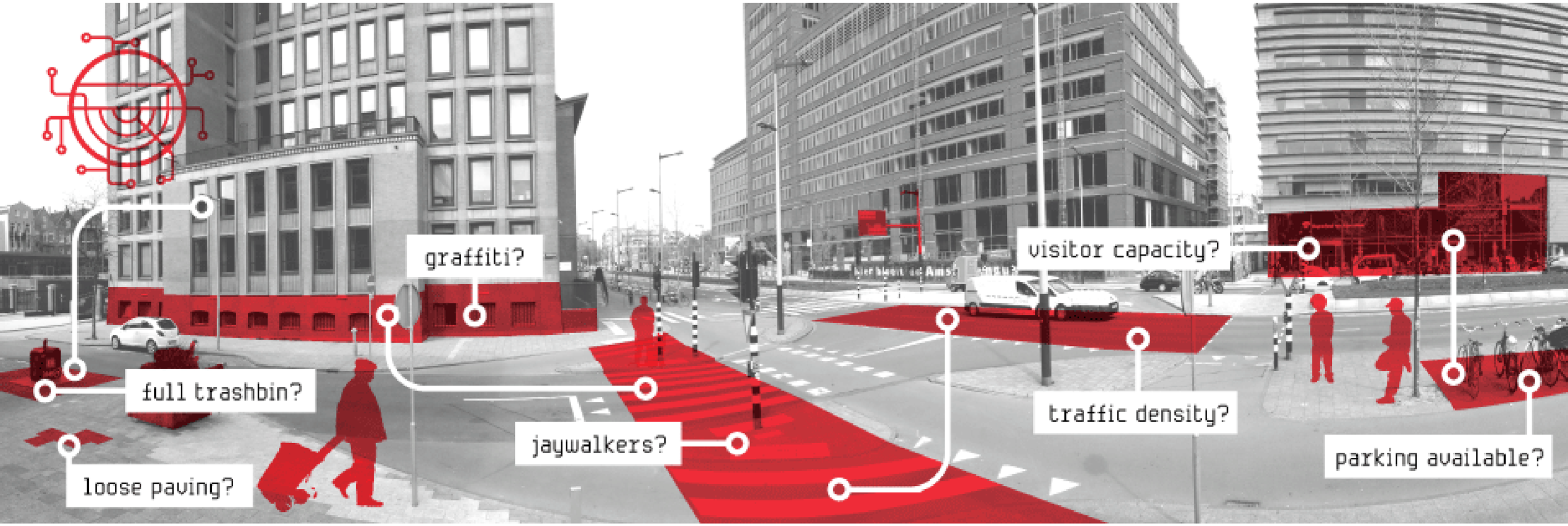
Project Conclusion & Recommendations

WHAT IS A SMART CITY?

(Theoretical research)

"A smart sustainable city is an innovative city that uses ICTs and other means to improve quality of life, efficiency of urban operation and services and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects."

Source: Smart sustainable cities: An analysis of definitions, Focus Group Technical Report



Source: https://www.quora.com/What-are-some-great-smart-cities-projects-using-open-data

WHAT IS A SMART CITY?

(Dimensions)

Dimensions of smart city.
Universally accepted Aspects.

Other aspects include Smart Morphology, Smart Governance and Policies, Smart Urban Infrastructure (Services), Smart Sustainability

SMART ECONOMY
(COMPETITIVENESS)

- Innovative Spirit
- Entrepreneurship
- Economic image & trademarks
- Productivity
- Flexibility of Labour Market
- International embeddedness
- Ability to transform

SMART PEOPLE
(SOCIAL AND HUMAN CAPITAL)

- Level of Qualification
- Affinity to life long learning
- Social and ethinic plurality
- Flexibility
- Creativity
- Cosmopolitanism/ Open-mindedness
- Participation in public life

SMART GOVERNMENT
(PARTICIPATION)

- Participation in decision-making
- Public and social services
- Transparent Governance
- Political strategies and perspectives

SMART MOBILITY
(TRANSPORT AND ICT)

- Local accessibility
- (Inter-)national accessibility
- Availability of ICT infrastructure
- Sustainable, innovative and safe transport system.

SMART ENVIRONMENT
(NATURAL RESOURCES)

- Attractivity of natural conditions
- Pollution
- Environment protection
- Sustainable resource management

SMART LIVING
(QUALITY OF LIFE)

- Cultural facilities
- Health conditions
- Individual safety
- Housing quality
- Education facilities
- Touristic attractivity
- Social cohesion

UNDERSTANDING SMART CITY?

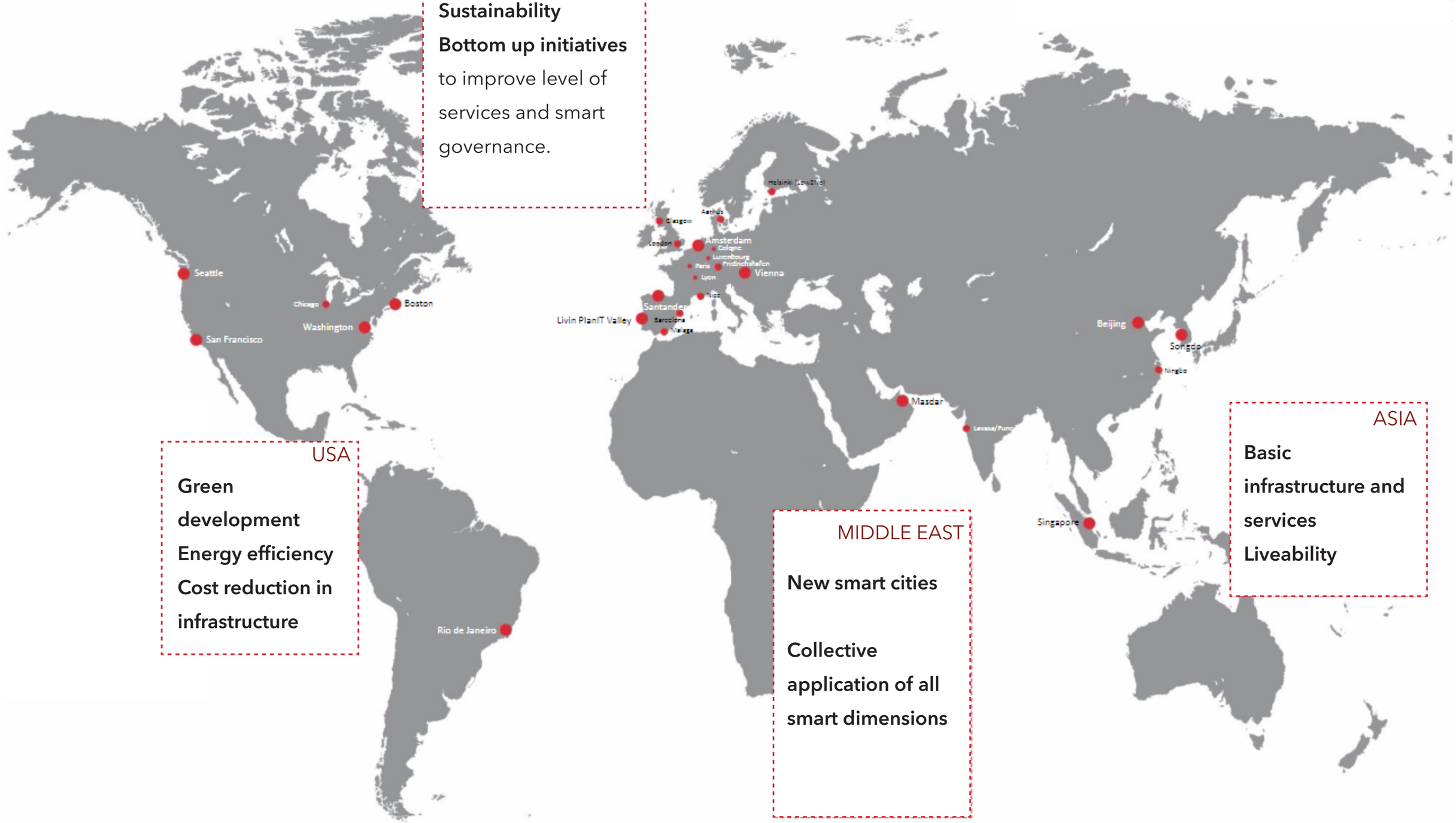
(Differences and Similarities)

Original smart city concept	Perceived smart city concept
PEOPLE CENTRIC	TECHNOLOGICAL EXPANSION
CITIZEN FRIENDLY	ICT
EVEN DISTRIBUTION OF RESOURCES	INTERNET OF THINGS
SUSTAINABILITY	BIG DATA
	INFRASTRUCTURE

CONDITIONAL SMARTNESS

EUROPE

Strong local leadership
Sustainability
Bottom up initiatives
to improve level of services and smart governance.



USA

Green development
Energy efficiency
Cost reduction in infrastructure

MIDDLE EAST

New smart cities

Collective application of all smart dimensions

ASIA

Basic infrastructure and services
Liveability

Source: "Towards Smarter Cities" for Dar Group, prepared by FUD

25 CITIES

Source: Drawn by Author

WHERE TO LEARN FROM?

(Application of smartness)

Smart Campus Vienna

Street lab Copenhagen

Cityverve

Waterfront Toronto

Smart Grid Program

PIONEERS OF SMART INDIA

(Hope for growth)

Lavassa- Pune

Gift city- Ahmedabad

Dholera- Gujarat

SECTION 3

Indian Smart City Mission

Smart City Concepts and Learnings from the World

Planning and Design Strategies

Site | Problem Analysis | Site Analysis |Project Concept | Project and Policies

Project Conclusion & Recommendations

LOCATION
DELHI

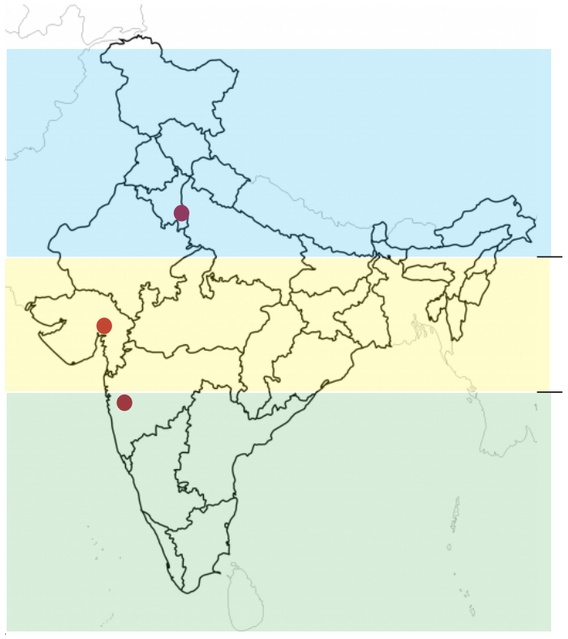
(Focus)

Analysis- 3 Indian Cities

Evaluation- Indian smart city Proposal

Design- 2 sites from Delhi

Impact- Delhi



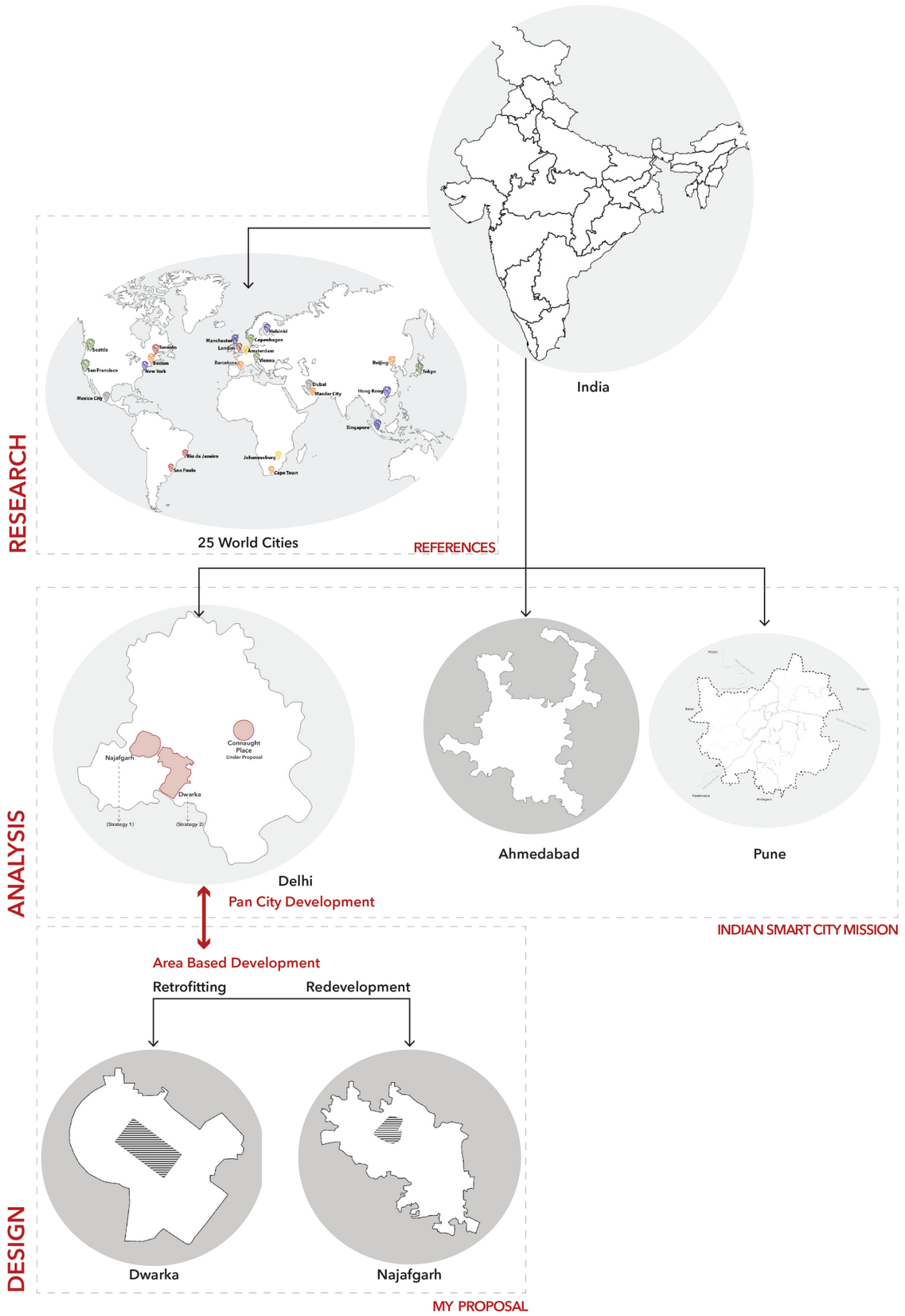
City Identity

Northern India
New Delhi

Central India
Ahmedabad

Southern India
Pune

Different city identity and culture



PROBLEM ANALYSIS

(Why Delhi?)

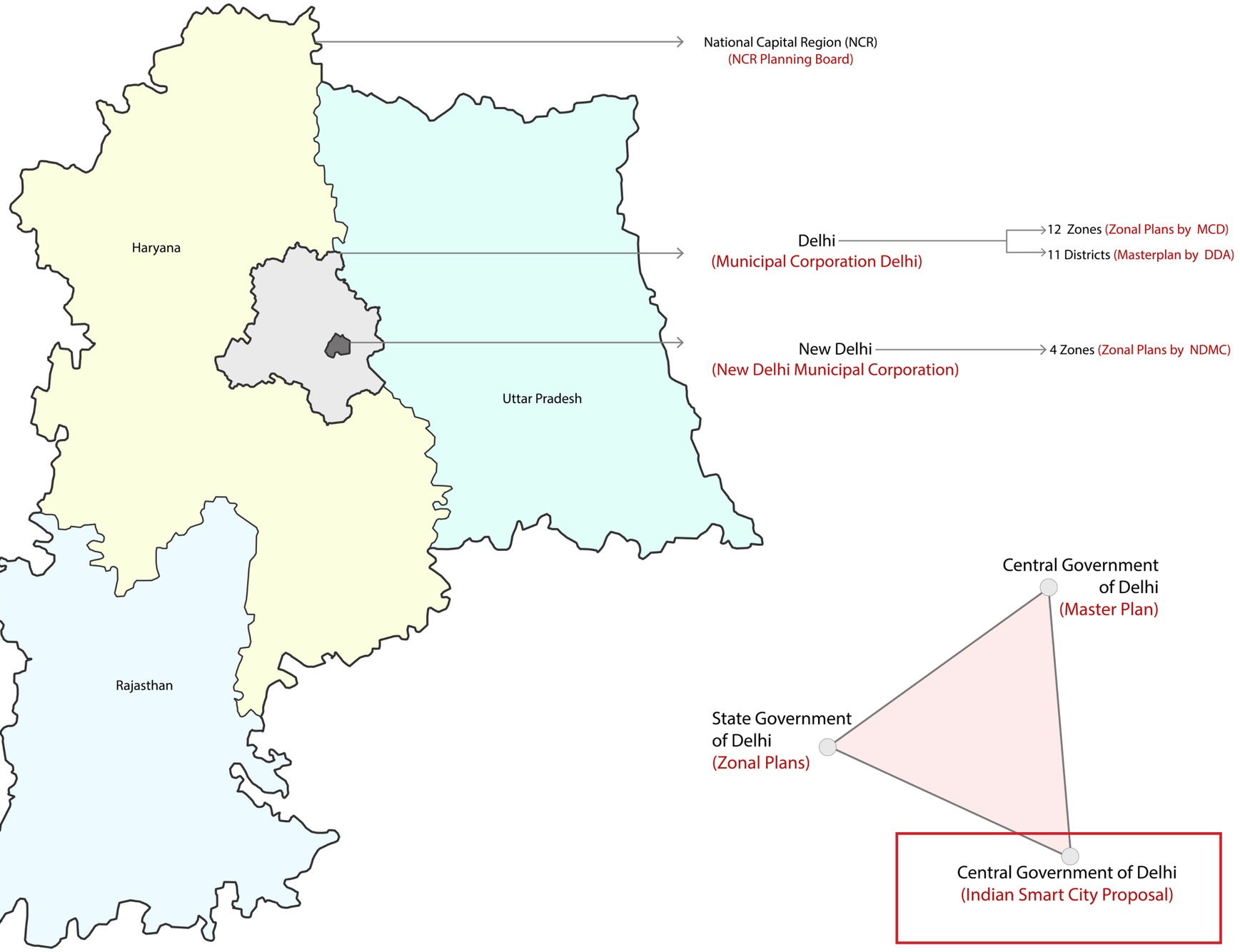
Population - 27,197,000 (2017)
Population Density- 6032 person per sq Kms
Area - 1,484 km²
Government structure-

The administrative responsibilities of the National Capital Territory of Delhi (NCT) are shared by five governing bodies

- New Delhi Municipal Council
- Delhi Cantonment Board
- North Delhi Municipal Corporation
- East Delhi Municipal Corporation
- South Delhi Municipal Corporation

GOVERNMENT SYSTEM

(Policies and proposal)



What Problems?

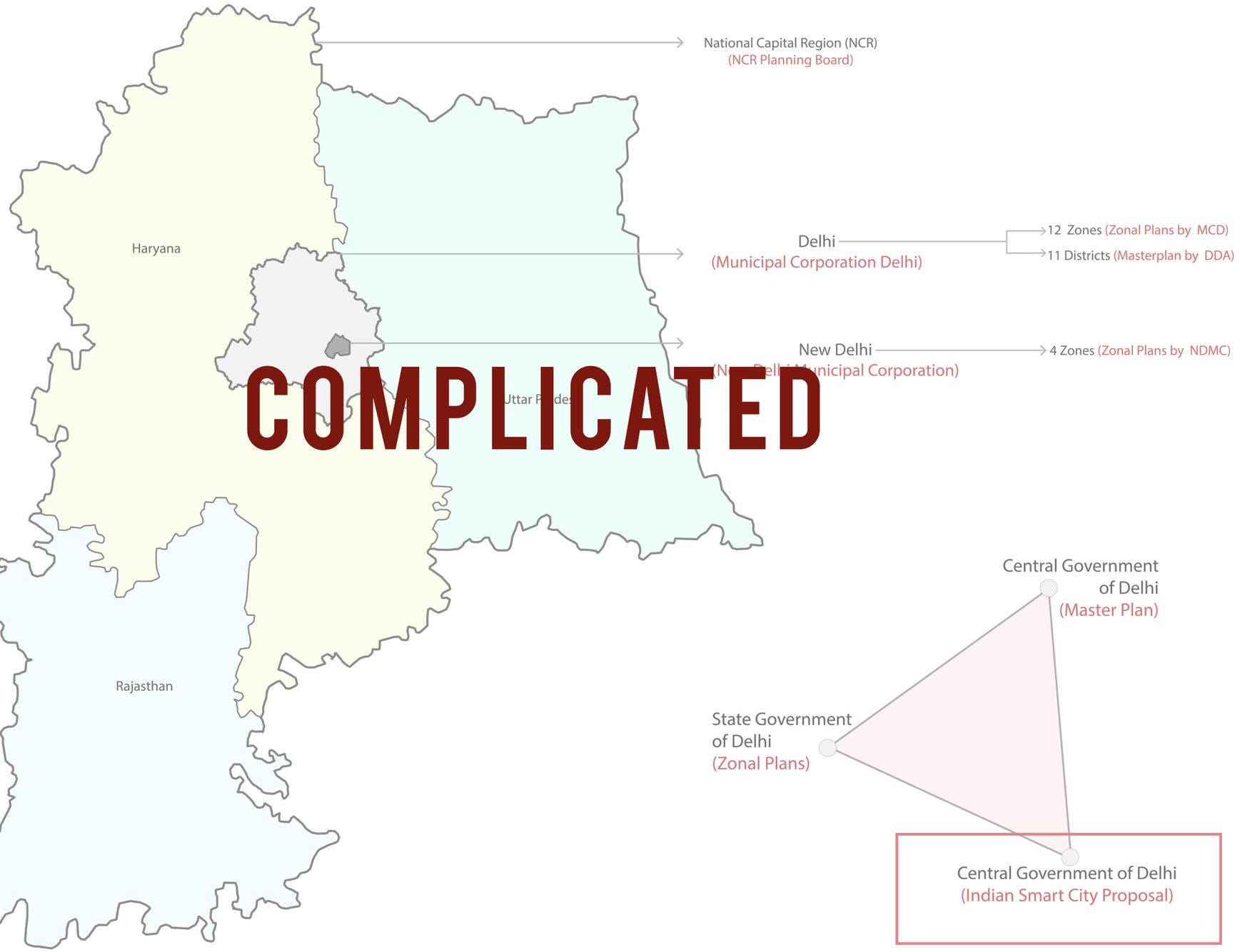
PLANNING SYSTEMS

GOVERNMENT SYSTEMS

New Proposal | New Authority

GOVERNMENT SYSTEM

(Policies and proposal)



COMPLICATED

What Problems?

PLANNING SYSTEMS

GOVERNMENT SYSTEMS

New Proposal | New Authority

PLANNING SYSTEM

(Master Plan)

MASTER PLAN

⇅

ZONAL PLAN

⇅

SUB-ZONAL PLAN

⇅

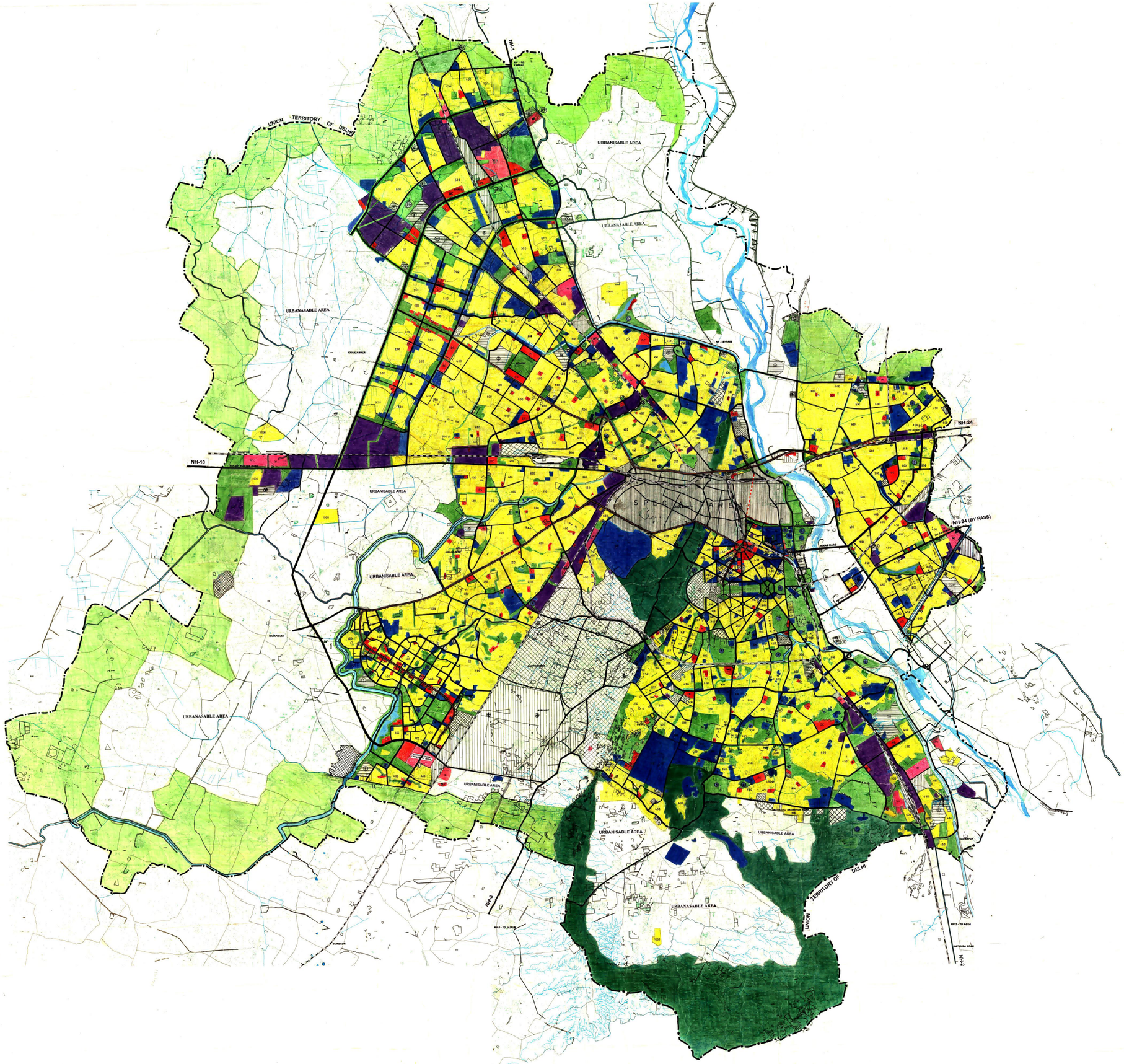
LOCAL AREA PLAN

⇅

SECTOR PLAN

⇅

NEIGHBORHOOD PLAN



PLANNING SYSTEM

(Master Plan)

MASTER PLAN

⇃↿

ZONAL PLAN

⇃↿

SUB-ZONAL PLAN

⇃↿

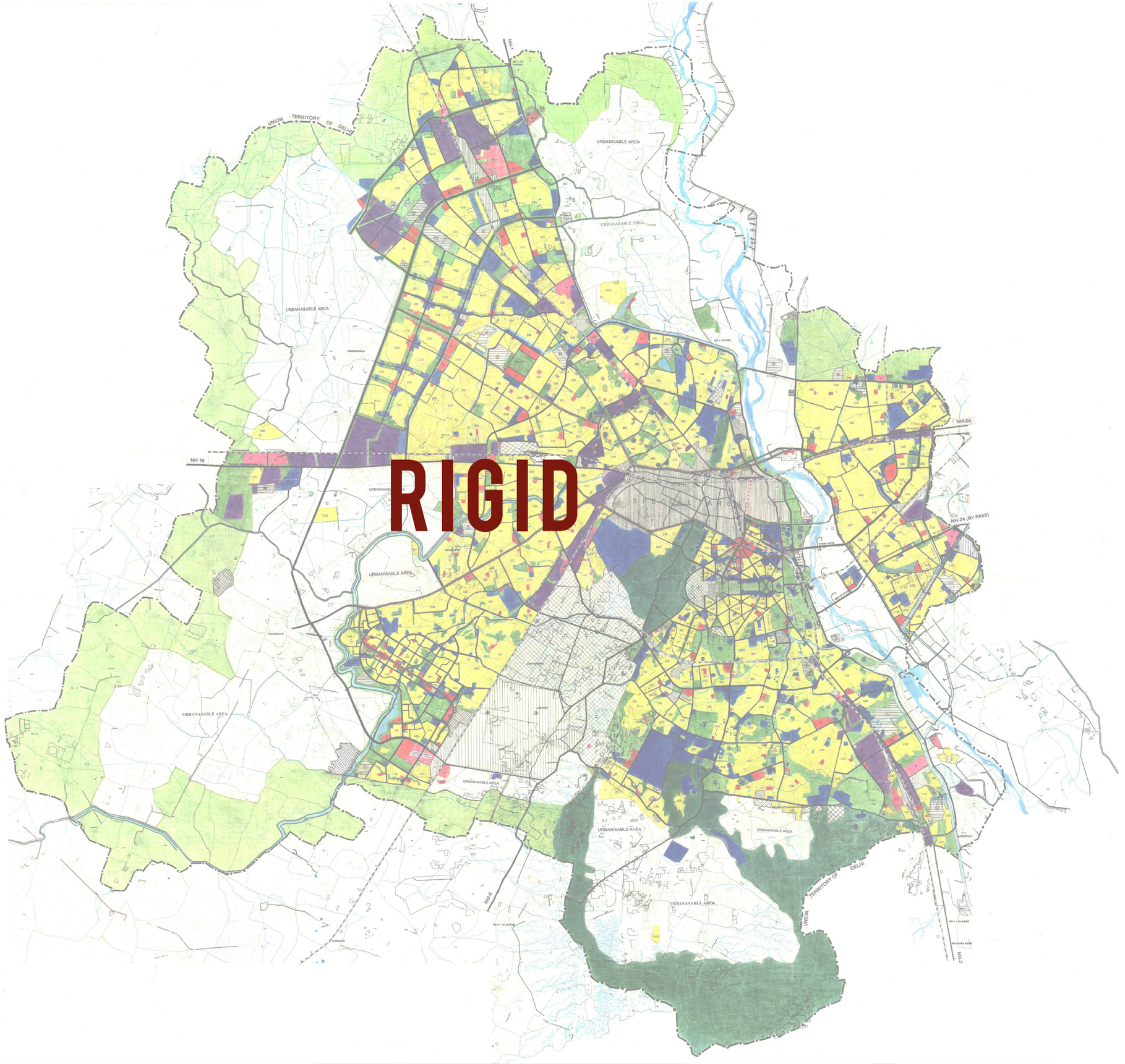
LOCAL AREA PLAN

⇃↿

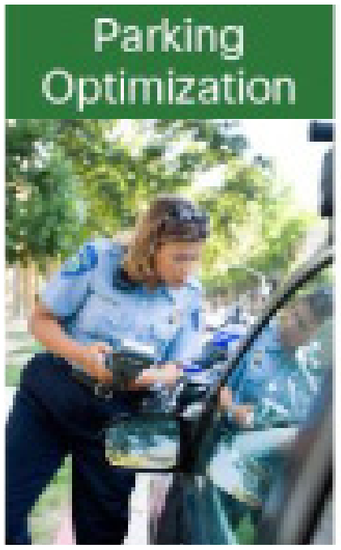
SECTOR PLAN

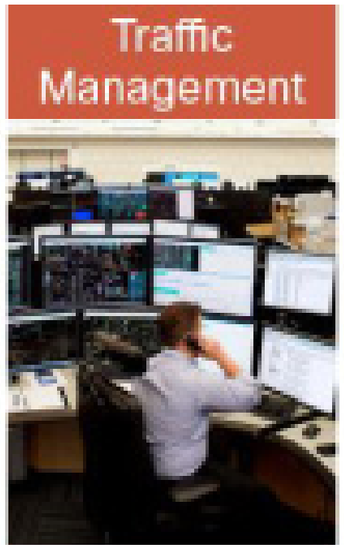
⇃↿

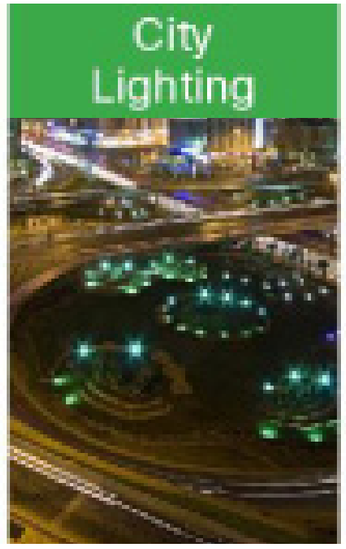
NEIGHBORHOOD PLAN

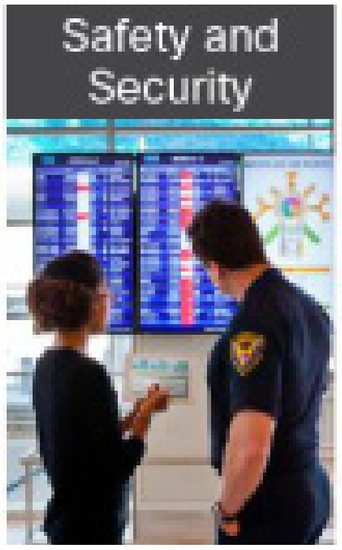


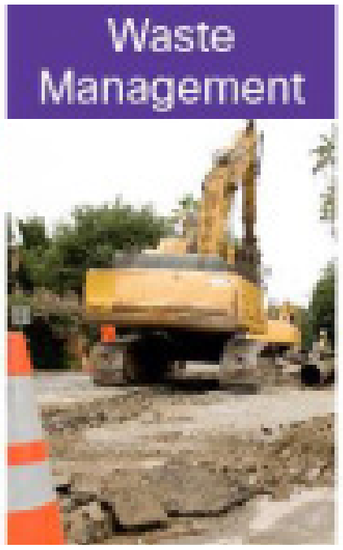
GOVERNMENT PROPOSAL

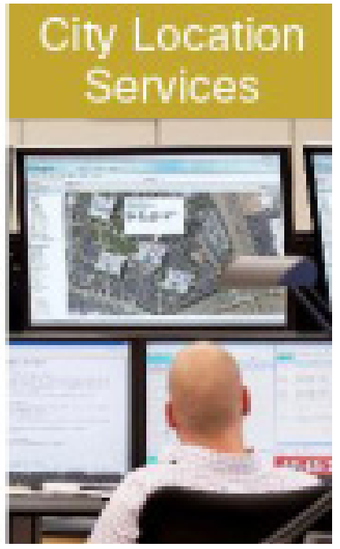




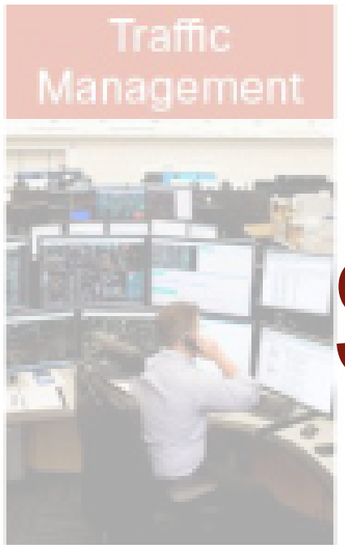


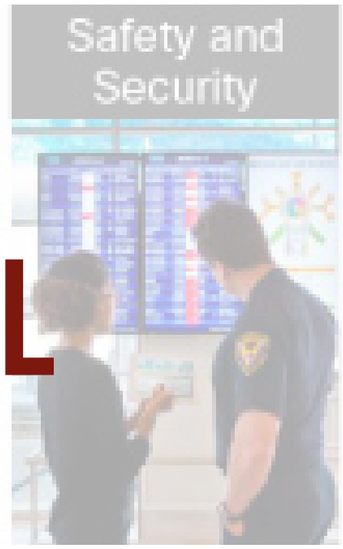


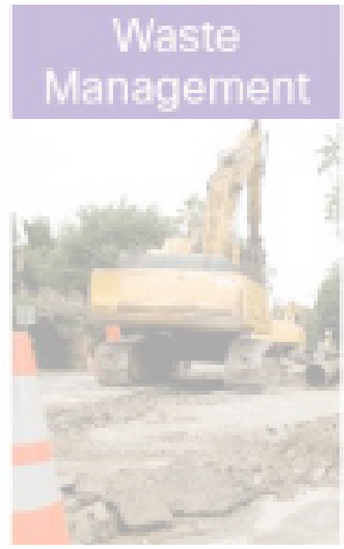


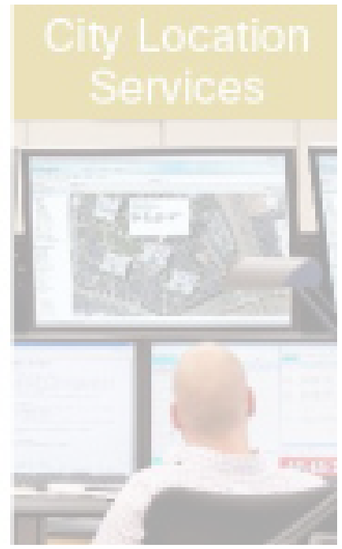


GOVERNMENT PROPOSAL









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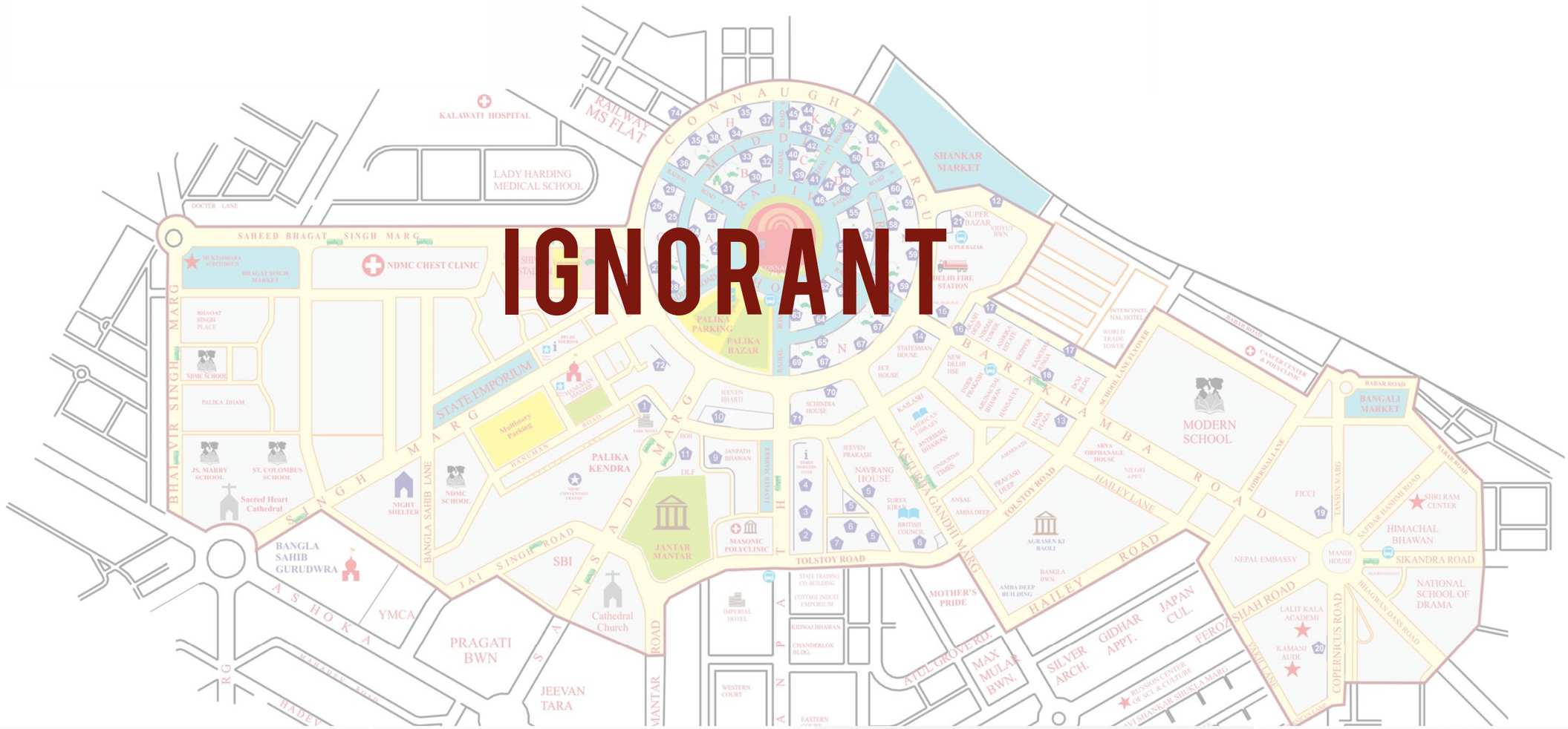


IGNORANT

MAIN ISSUE

(Scope of project)

MASTERPLAN ↔ INDIAN SMART CITY MISSION

↓

EXCLUDING THE CITIZENS

A lot of population!
Let's use that opportunity.

FROM THE QUESTIONNAIRES

(Professionals and Common man)

26 citizens
10 professionals

1. What issues are they facing staying in Delhi (daily life problems)
2. Awareness/ information about Indian Smart City Mission
3. Expectation from Smart city proposal
4. How much involvement of citizens would they like?

Rana Sarkar, Govt. employee

Smart development should be inclusive of all stakeholders

Sustainable on the longer run

Local accessible government

S.K. Banerjee, 65 years

Pollution is a major problem

Women security issue

Lack of awareness for smartness

Improve quality of life

Free Wifi zone, digitization is necessity

Meenakshi Singh, DDA

General awareness of 100 smart cities

No involvement in implementation (Only strategies and policies)

Most of the elements of the proposal has been already addressed in other spatial development projects

Dr. Vishakha Kawathekar

General floating information about smart cities

Alien concept of digitization in Indian traditional system

Citizen responsible and participatory

Acknowledging cultural infrastructure

Praphul, 39 years

Potable water crisis

Air and noise pollution

Well informed Smart city proposal through breaking news

Priorities are misplaced in the fundamental objectives

Vikas Kumar, 34 years

Unhealthy and unhygenic slums in the city

Traffic congestion

Better connectivity and efficient public transport is needed

Source: Anuj Kale, Pune, India
Leewardists

INDIAN SMART CITY DEFINITION

(What it should be?)

According to me the definition of smart city for Indian context could be:

Smart designing and planning in terms of distribution of resources to reduce the uneveness of **infrastructural services**. And the smartest way to reach this goal would be **inclusion of citizens** in the process of making the city smarter. The users should be able to **access the city in a smarter way** otherwise there is no point to include technology in not-so-urban areas.

Also as quoted by H. Chourabi in Understanding smart cities: An integrative framework. Proceedings of the Annual Hawaii International Conference on System Sciences

"Smart cities as an opportunity to rethink the notion of urbanization with a more systemic approach, reintegrating the concept of sustainable development into the urban context."

*We need **smart urbanism** instead of smart cities.*

-Maarten Allard Hajer

*"Making **MASSIVE SMALL** Change"*

-Kelvin Campbell

SITE SELECTION

(The two sites)

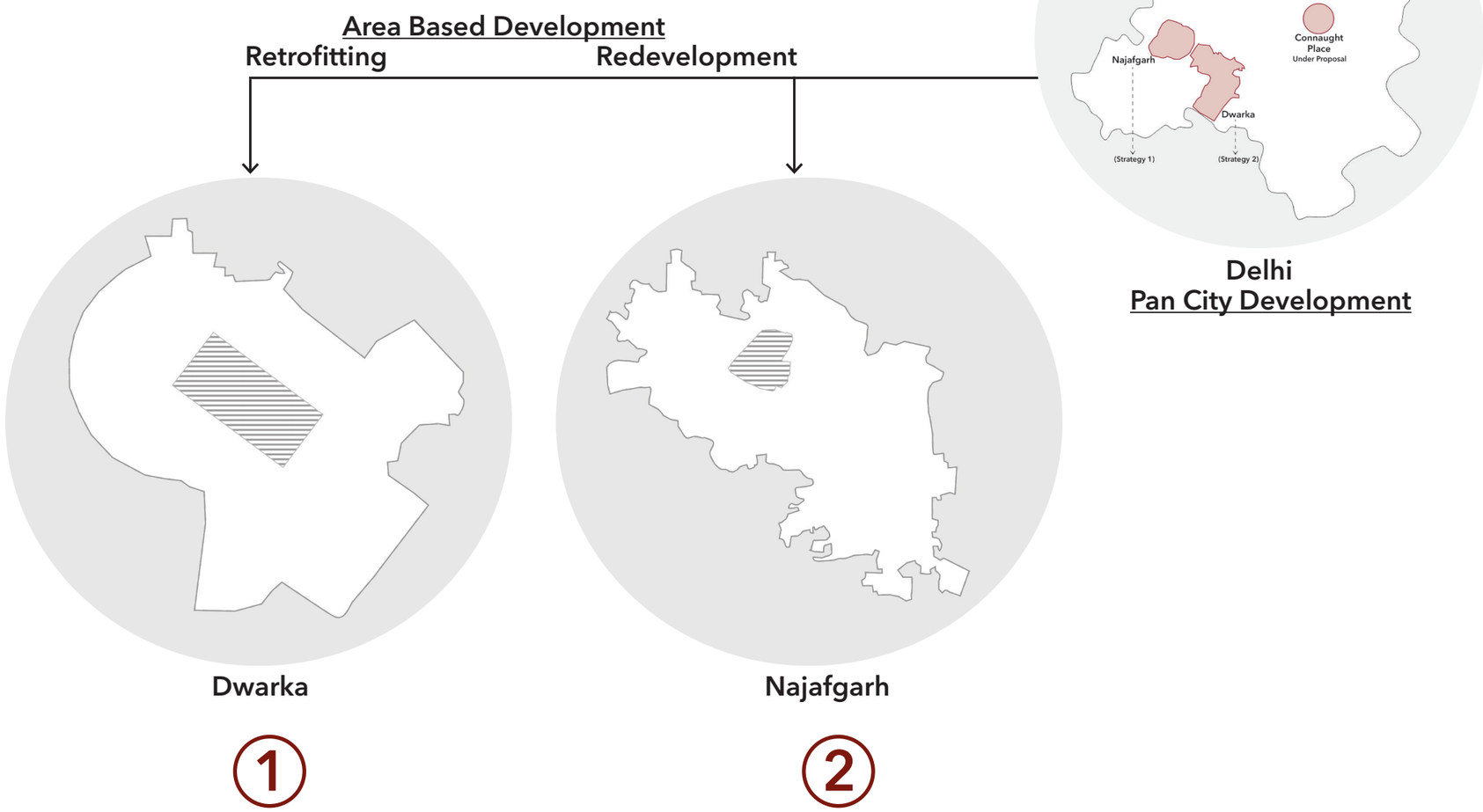
Difference in density

Infrastructure

Open spaces

Quality of houses

Social cohesion



DWARKA ①

(Site 1)

DWARKA SECTOR 11-12

(Demonstration Project)

NAJAFGARH ②

(Site 2)

NAJAFGARH
SECTOR 11-12
(Demonstration Project)

THE TWO SITES

(Locations)

DWARKA SECTOR 11 & 12 (SITE AREA)

DWARKA SECTOR 11 & 12 (SITE AREA)

4.8 KMS

1.2 KMS

1

2

NAJAFGARH

Sub-City in the South West Delhi district

Population: 1.365 million (2011)

DWARKA

Dwarka is the largest residential suburb in Asia.

Area: 56.48 km2

Population: 1.1 million (2011)

Two neighborhoods at a distance of one and half Kms are having diffrent issues and are served differently by the Government.

WHY?

THE PROJECT

(Concept- Living Lab)

Difference between

LIVING LAB AND LIVING LAB PLATFORM

5 key elements are must be present in a living lab:

1. active user involvement
2. real-life setting
3. multi-stakeholder participation
4. a multi-method approach
5. co-creation

THE PROJECT REFERENCE

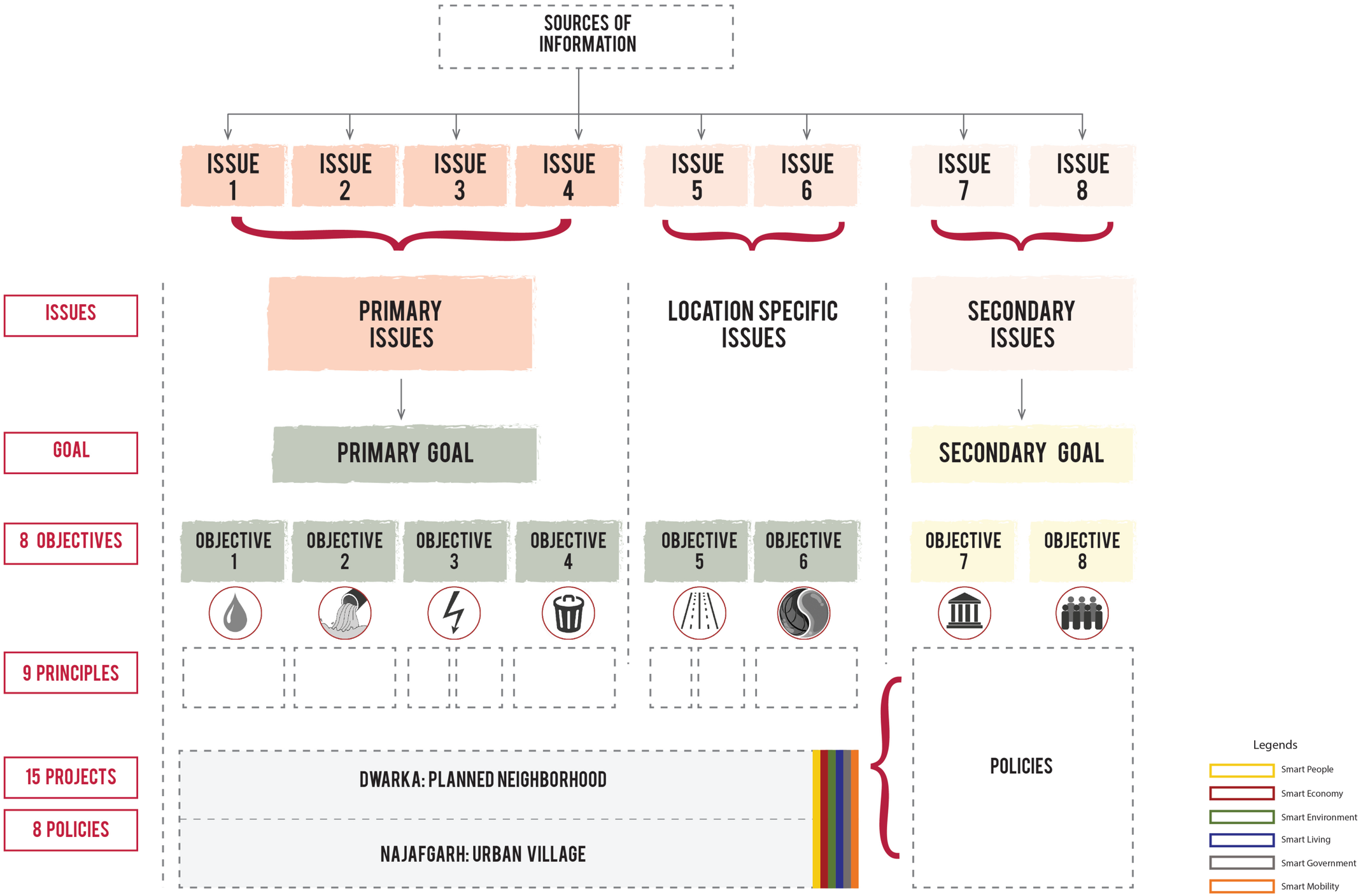
: Amsterdam smart city experience lab
Source: https://amsterdamsmartcity.com/projects/smart-city-experience-lab

The Smart City Lab is initiated by Amsterdam Smart City. In this Lab dozens of Smart City solutions can be found from Amsterdam and other cities within several themes. Information regarding each innovation will be displayed on a Smart ID Card – a brief information card with answers to several key questions. Around the exposition we are organising a series of lectures and workshops that explain the Smart City concept further.

The Green Living Lab is a living lab in nature, where pioneers in sustainable living, social entrepreneurs & students meet to explore & inspire healthier urban living.

DESIGN INTERVENTION FRAMEWORK

(How to read)



DESIGN INTERVENTION FRAMEWORK

SOURCE

1. CRITICISM ON INDIAN SMART CITY PROPOSAL
2. QUESTIONNAIRES
3. SITE OBSERVATION

ISSUES

- Scarcity of water supply by the municipality
- The sewage system is polluting the waterbodies and ground water.
- Frequent interuptions in continuous flow of electricity.
- Ineffective waste collection sytems (local and central).
- Traffic Congestion
- Smelling drain
- Unclear policies. Unapproachable authorities.
- Citizens against and unawared of smart city concept.

PROJECT GOALS

UNEVEN DISTRIBUTION OF INFRASTRUCTURE AND SERVICES OVER THE CITY

PRIMARY GOAL

PROVISION OF QUALITY URBAN INFRASTRUCTURE (BASIC NEEDS)

UNWANTED GAP BETWEEN CITIZEN AND THE GOVERNMENT

SECONDARY GOAL

PROVISION OF QUALITY URBAN ORGANIZATION AND PLANNING

OBJECTIVES

1. PROVIDE SAFE AND SUFFICIENT FRESH WATER
2. PROVIDE NON-POLLUTING SEWAGE SYSTEM
3. STIMULATE DISTRIBUTED PRODUCTION OF RELIABLE ELECTRICITY
4. PROVIDE HEALTHY AND EFFICIENT WASTE MANAGEMENT SYSTEM
5. IMPROVE STREET USAGE
6. REVIVIFY NATURAL ENVIRONMENT FOR HEALTHIER LIFESTYLE
7. RAISE TRANSPARENT GOVERNMENT
8. INVOLVE CITIZENS IN THE CITY PROJECTS

PRINCIPLES

1. Harvest rain water for domestic usage and community farming.
2. Separated sewage pipeline system.
3. Local grey water treatment plant.
4. Solar Panel Installation on building level.
5. Biomass electricity production on local scale.
6. Waste separation
7. Local composting
8. Reshape street connections and usage.
9. Urban Ecological Corridor along Najafgarh Drain
1. New supervising authorities on small scale
2. Flexible Gentrification in the masterplan to meet the reality.
3. Integration of proposals by Indian Smart City Mission
4. Green Governmental Institutions
5. Information through educational institutes. Smart Citizen Workshop
6. Public subsidies for technology retrofitting and incentives to local energy production or services.
7. Enhance public-private -people partnership.
8. Redirecting investments. 5% of tax amount to be decided by the citizens

PROJECTS

DWARKA : PLANNED NEIGHBORHOOD

1. Housing society rain water harvesting project for society green spaces and community farming.
3. Separate pipesystem to discharge grey water from sinks, showers and washing machines.
4. The separated grey water pipeline directed to central helophyte filters for purification .
6. Solar Panels in housing societies that can be stored commonly.
8. Local biogas generator can be set up using separated waste in the unused land.
9. Separate garbage bags (household) and containers (neighborhood scale) for recycling.
11. Collective composting in barren lands.
13. Adaptable Usage of wider streets. Legalising shops and hawkers on temporary grounds.
15. 1. Water Treatment of the drain (Local Solutions)
2. Tree Plantation along the drain
3. Landuse clearing for settlement along the drain.
4. Open Public Spaces in later stages.

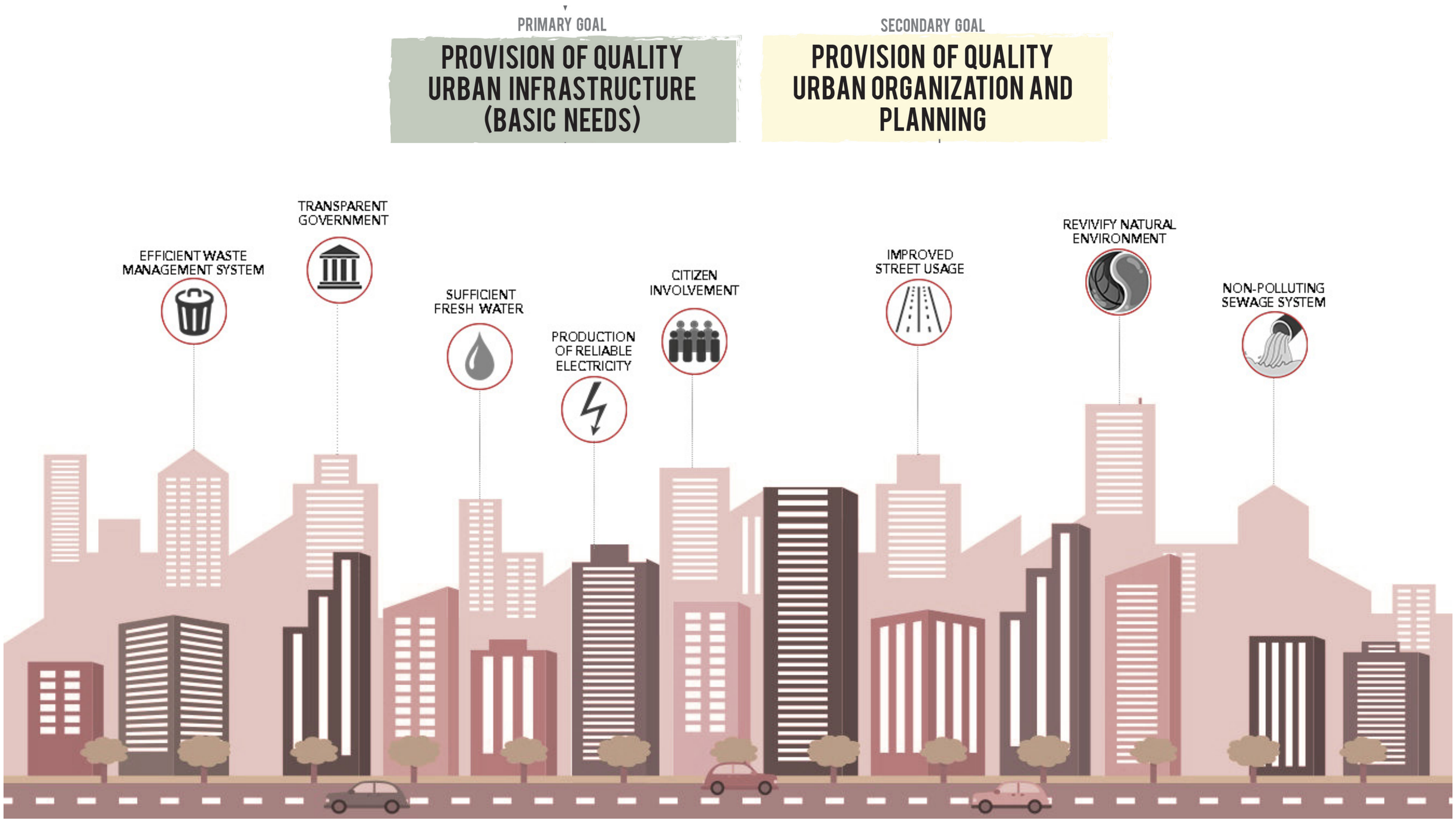
NAJAFGARH URBAN VILLAGE

2. Assembling individual houses for combined investment for rain water harvesting project.
?
5. Helophyte filters in open green spaces to cleanse ground water.
7. Solar Panels in mixed landuse buildings that can be stored in individual buildings.
?
10. Smart waste containers can sensor how full the bin is and communicate that with the collection facility.
12. Organic compost bin in each individual houses.
14. Improving road access by building large avenues that form prominent communication axes to the location.

SUPPORTING POLICIES

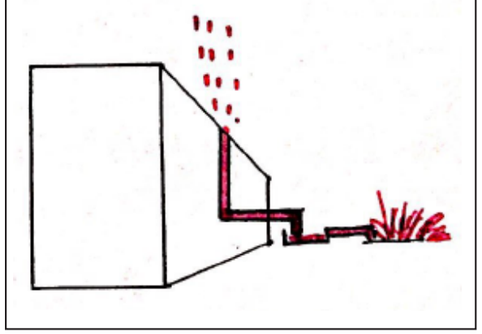
GOALS AND OBJECTIVES

(Based on Issues
and opportunities)

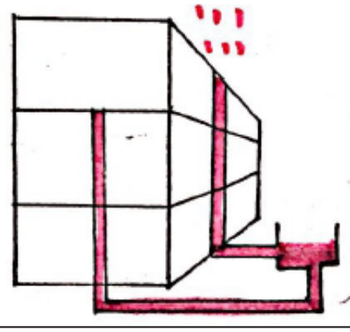


PROJECTS- LIVING LABS

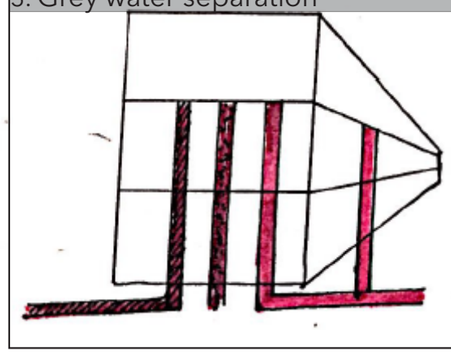
1. Rain water harvesting -common green



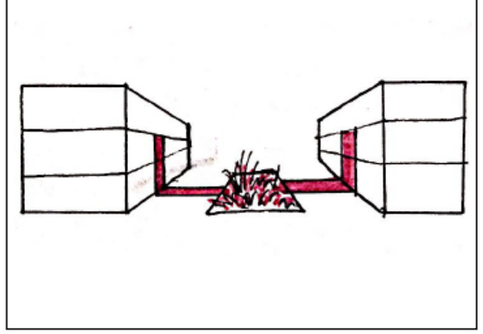
2. Rain harvesting-domestic uses



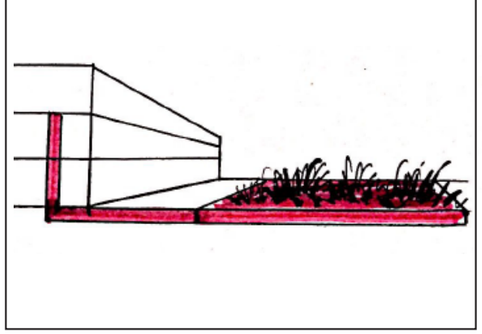
3. Grey water separation



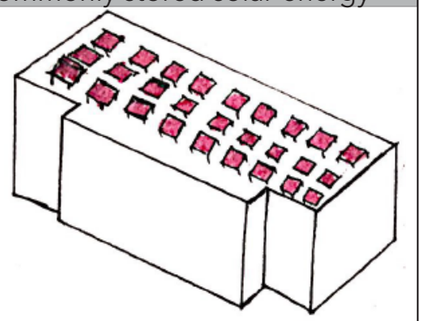
4. Central helophyte filters



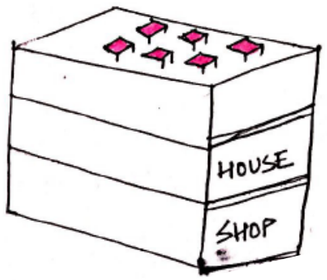
5. Ground water purification



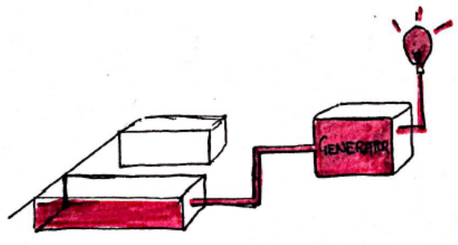
6. Commonly stored solar energy



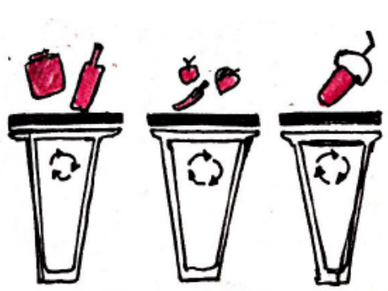
7. Solar panel in mixed landuse



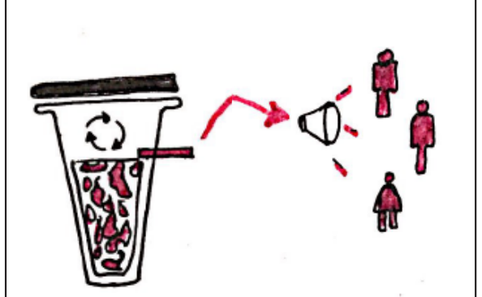
. Biogas electricity generation



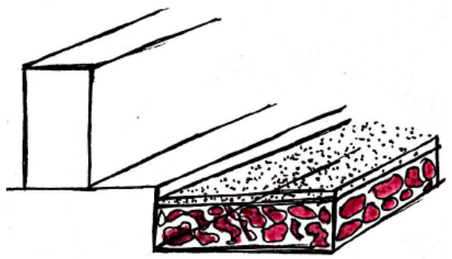
9. Garbage separation



10. Smart waste containers

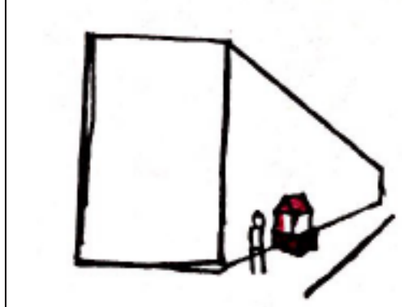


11. Collective composting

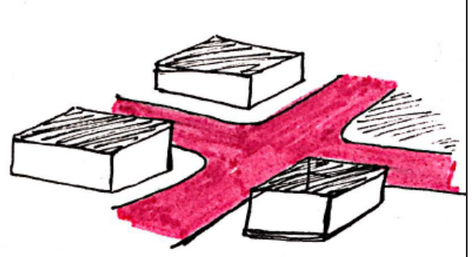


12. Organic compost bin

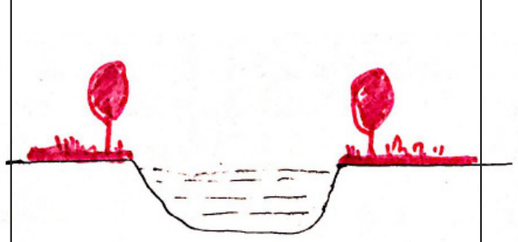
13. Adaptable street usage



14. Avenue connection



15. Urban ecological corridor



PROJECT 01 AND PROJECT 02

Objective → Provide safe and sufficient fresh water

Strategy → Rain water harvesting

Dwarka: Retrofitting

Rain Water Harvesting for Community Farming

Issues

Green areas maintainance- residents pay to the housing society

Najafgarh: Redevelopment

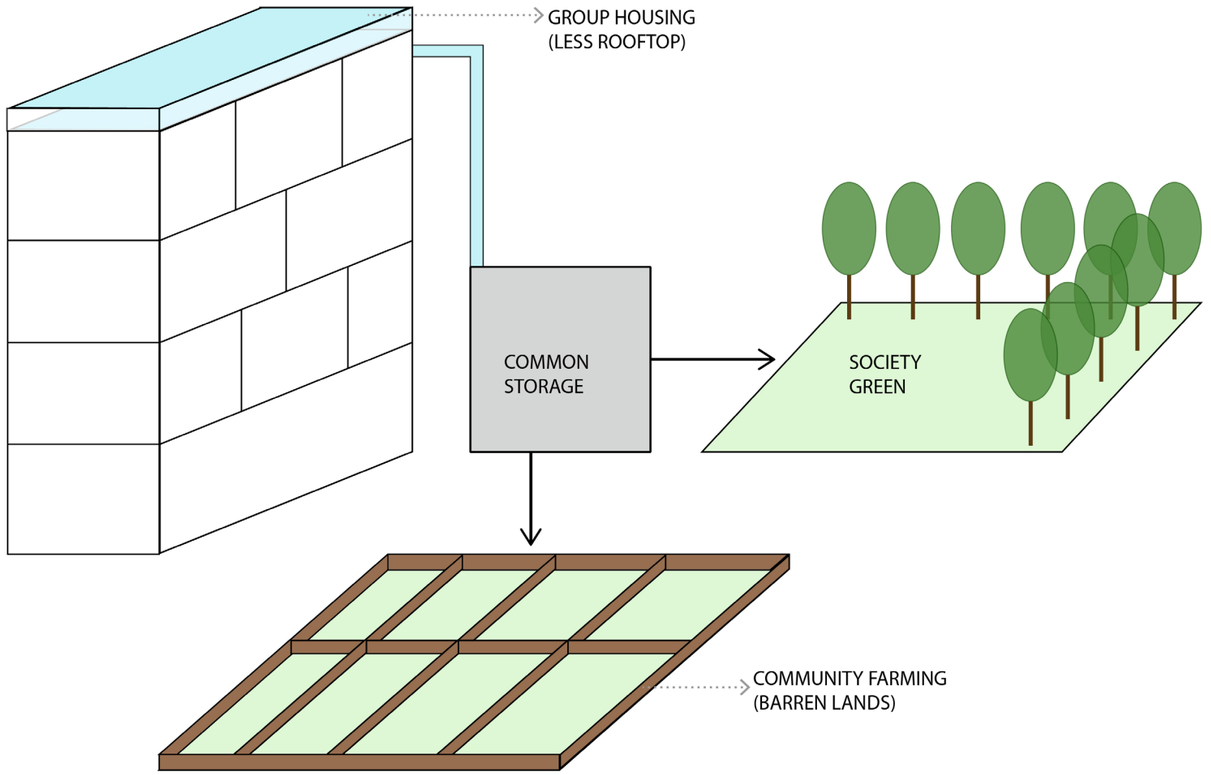
Rain Water Harvesting for Individual Houses

Drinking water tank provided by the municipality.

PROJECT 01 AND PROJECT 02

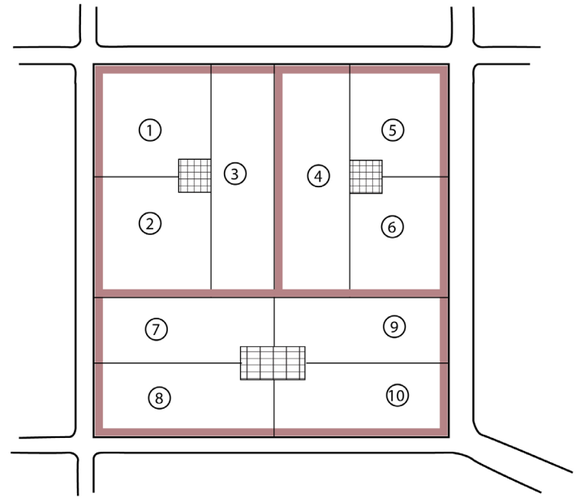
Dwarka: Retrofitting

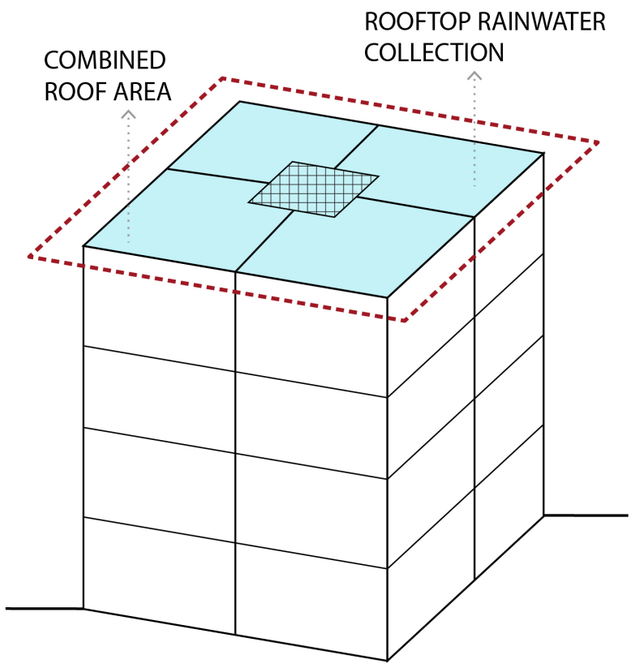
Rain Water Harvesting for Community Farming



Najafgarh: Redevelopment

Rain Water Harvesting for Individual Houses





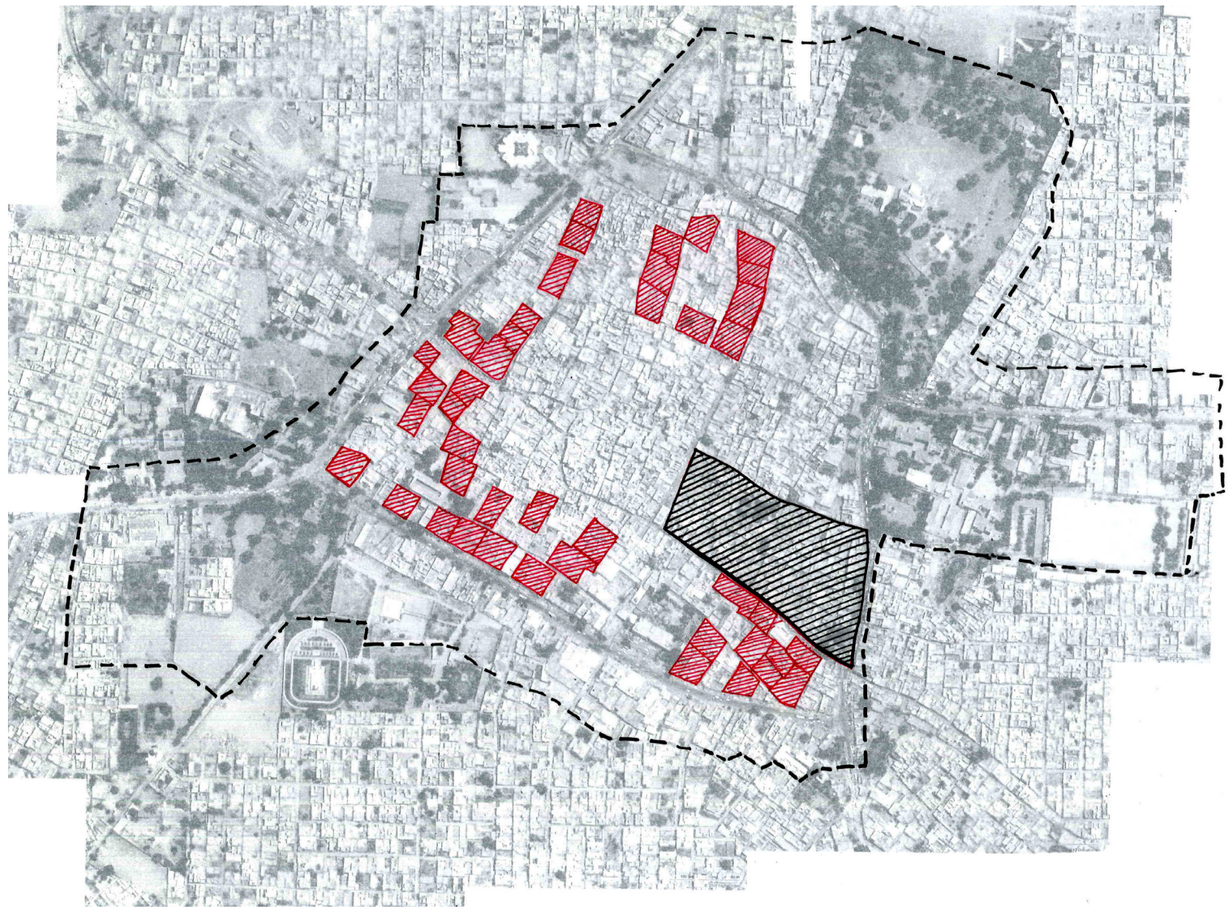
PROJECT 01 AND PROJECT 02

Dwarka: Retrofitting

Rain Water Harvesting for Community Farming

Najafgarh: Redevelopment

Rain Water Harvesting for Individual Houses



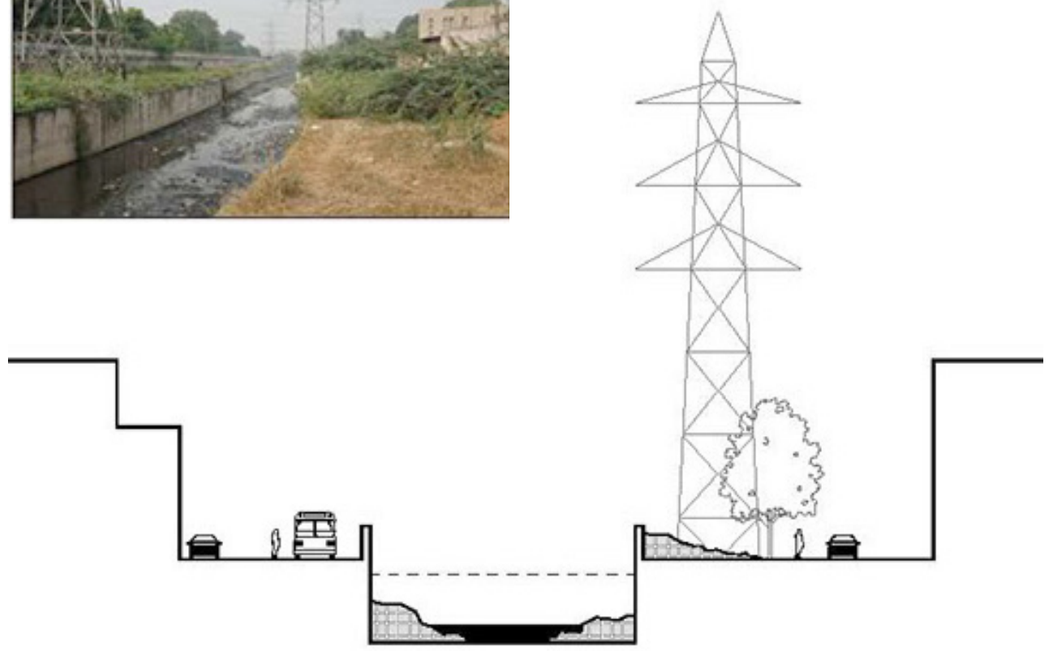
PROJECT 15

Objective → Revivify natural environment for healthier lifestyle

↓

Strategy → Phytoremediation

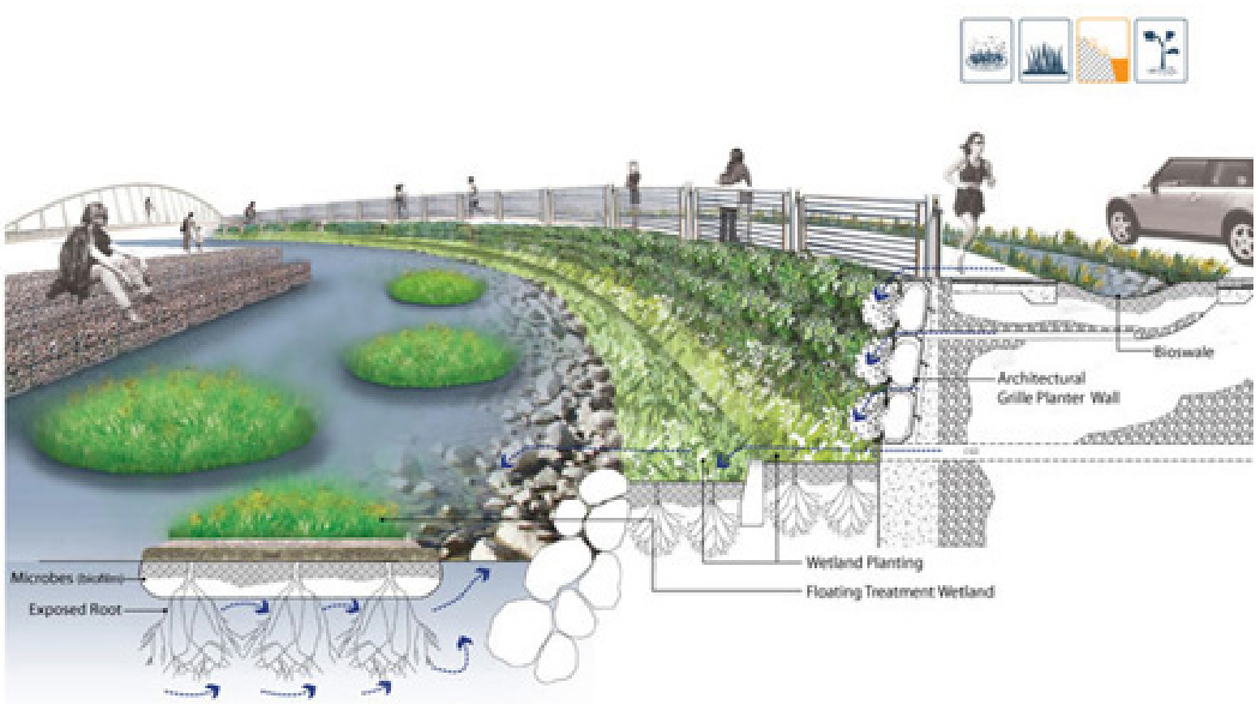
Urban Ecological Corridor



PROJECT 15

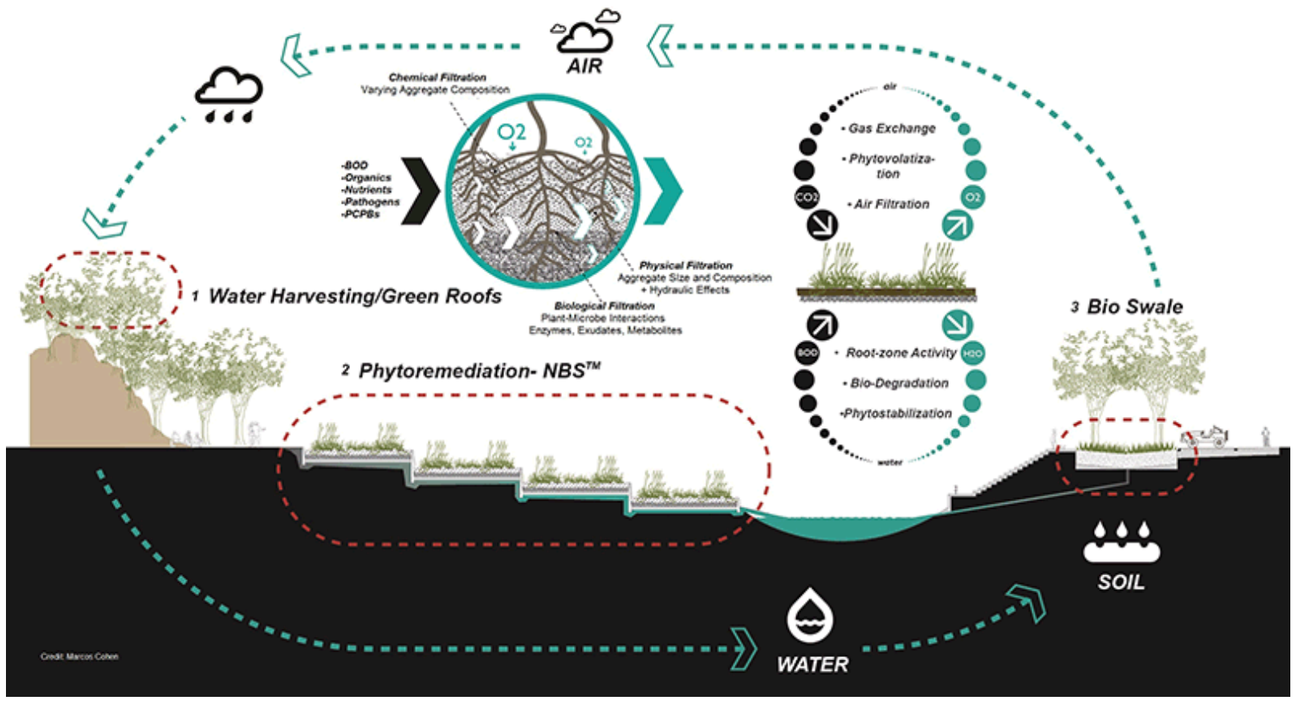
Urban Ecological Corridor

Principle



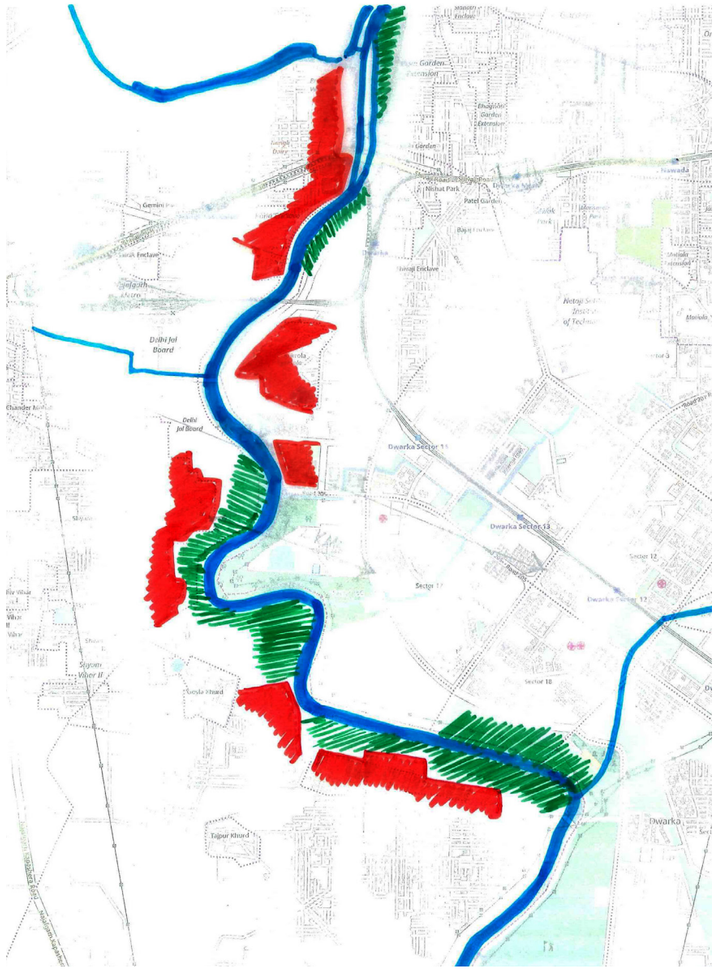
Smart city reference

The sustainable waterfront, Auckland, New Zealand



PROJECT 15

Urban Ecological Corridor



1. Water Treatment of the drain (Local Solutions)
2. Tree Plantation along the drain
3. Landuse clearing for settlement along the drain.
4. Open Public Spaces in later stages.

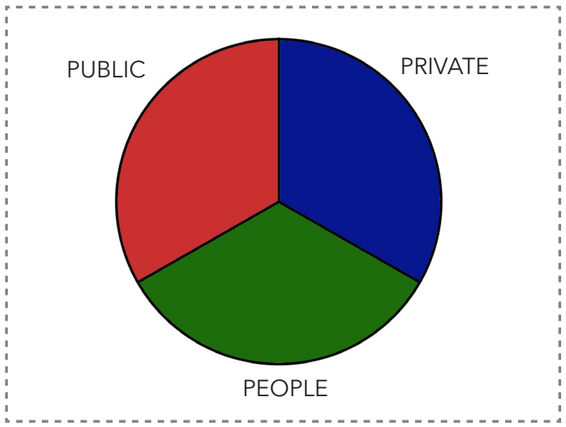
PROJECT 15

Urban Ecological Corridor

Actors

Government + Private +People

Private companies , Smart educational network, local and city level government authorities, citizens

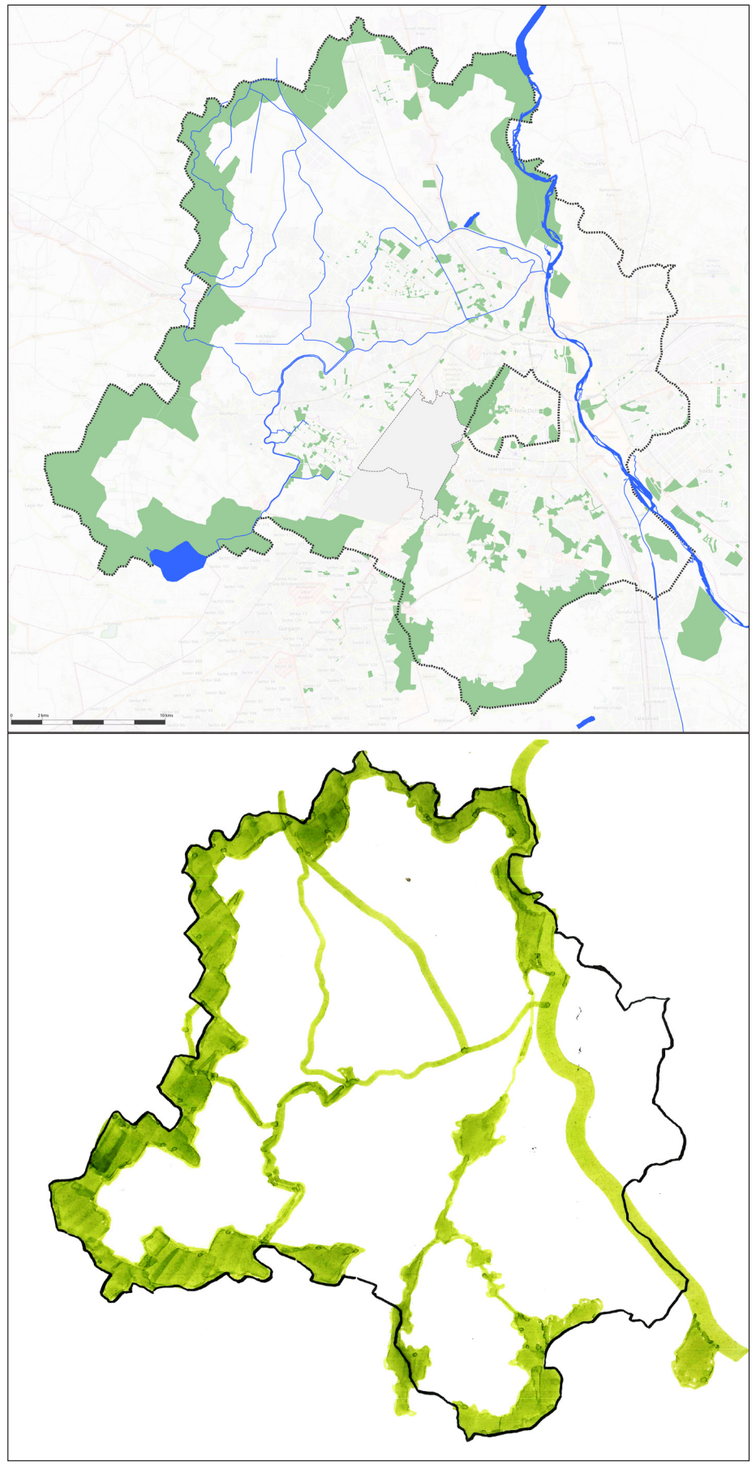


4P MODEL

Time Phasing

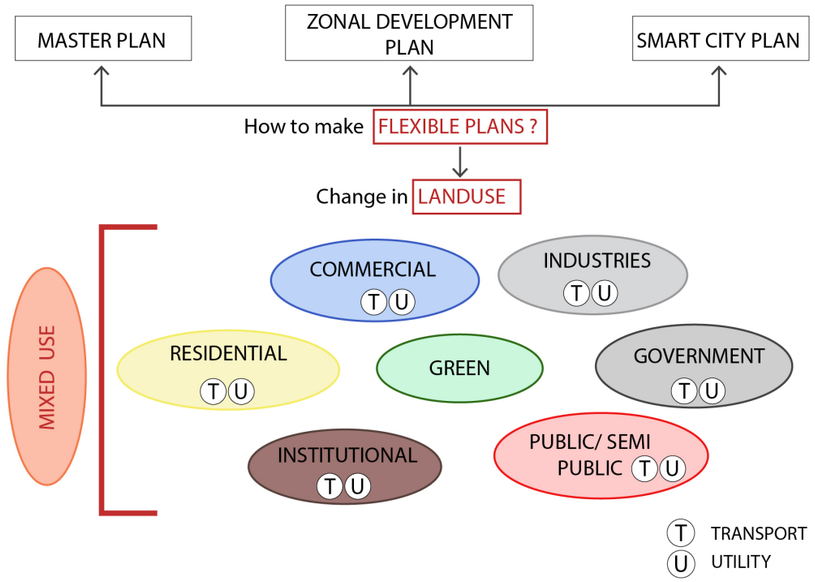
0-10 years- Phytoremediation process and local
treatment
0-10 years- Tree plantation and growth
10-15 years- Relocation of landuse and buildings
15-20 years- Public space and riverfront project.

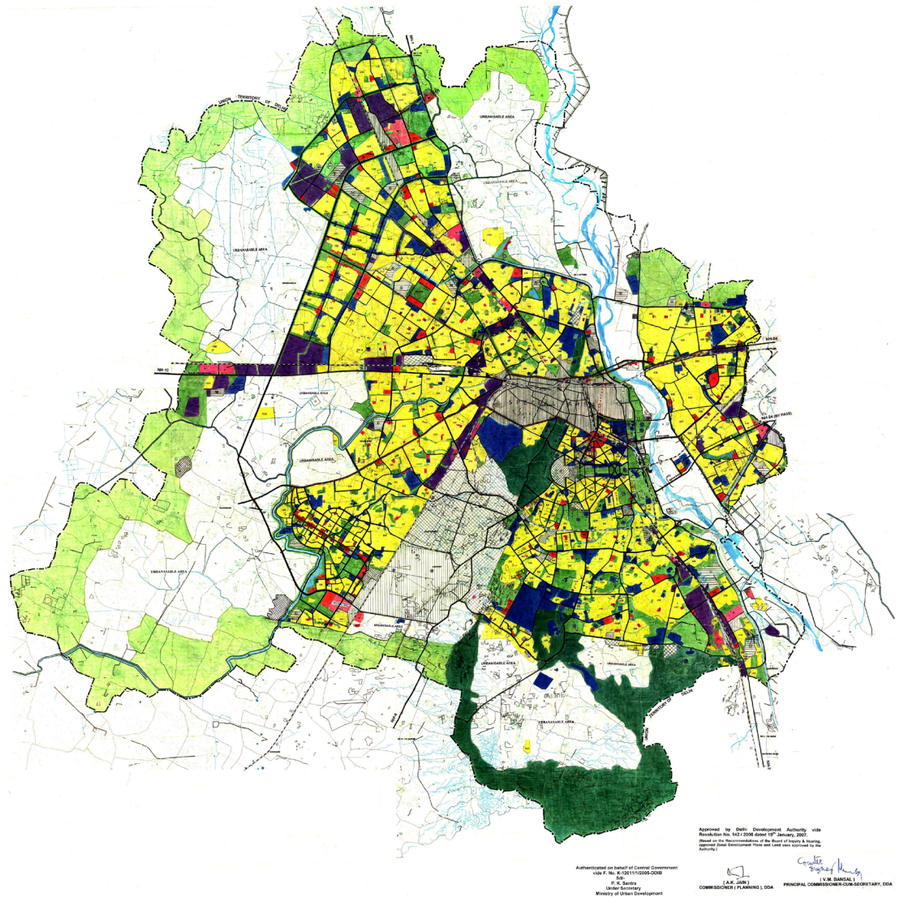
A bigger picture

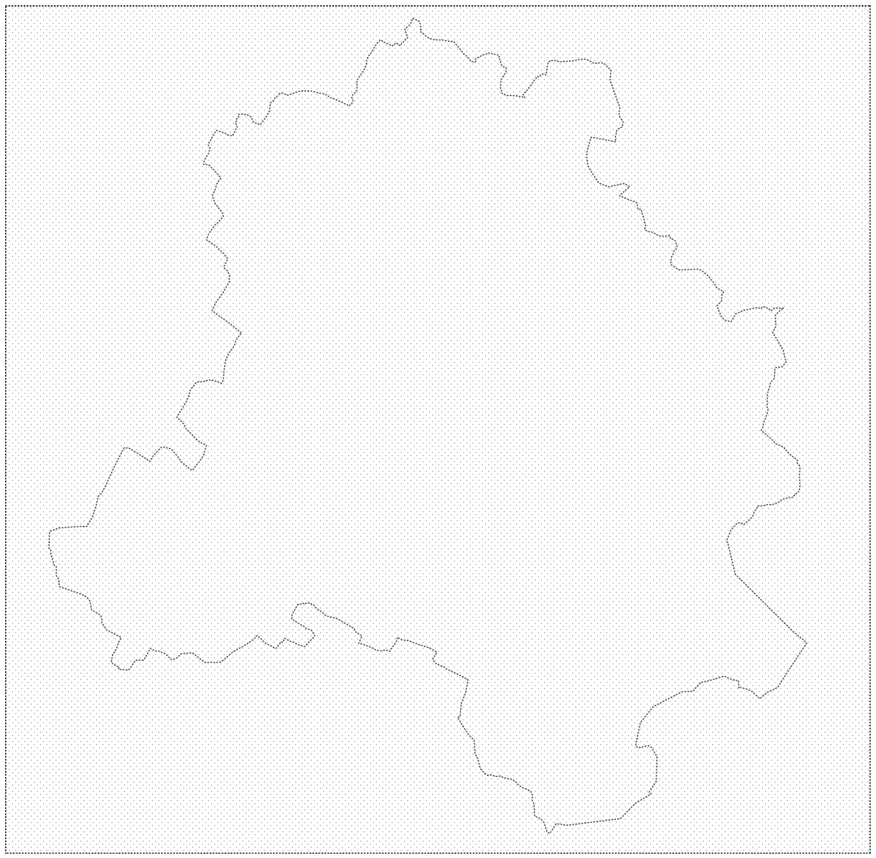


ADAPTABLE PLANNING- FLEXIBLE LANDUSE

(Policy 02)







ADAPTABLE PLANNING– FLEXIBLE LANDUSE

(Policy 02)

Table No. 2: Classification of Land Uses

Main Code	Sub Gr.Code	Main Groups	Sub Groups	Graphic Symbol	Colour Symbol
100		**RESIDENTIAL**			Yellow
	110		Primary Residential Zone		
	120		Mixed Residential Zone		
	130		Unplanned/Informal Residential Zone		
200		**COMMERCIAL**			Blue
	210		Retail Shopping Zone		
	220		General Business and Commercial District/ Centres		
	230		Wholesale, Godowns, ware- houses/ Regulated markets		
300		**INDUSTRIAL**			Violet
	310		Service Industry		
	320		Light Industry		
	330		Extensive Industry		
	340		Heavy Industry		
	350		Obnoxious/ hazardous Industry		
400		**TRANSPORT AND COMMUNICATION**			Black
	410		Roads		
	420		Railways		
	430		Airport		
	440		Seaport & Dockyards		
	450		Bus Depots/Truck Terminals/Freight complexes		
	460		Transmission &Communications(Telephone Exchange, TV Station, Broadcasting Station, etc.)		
500		**PUBLIC AND SEMI PUBLIC**			Red
	510		Govt/Semi Govt/ Public Offices		
	520		Govt Land(Use undetermined)		
	530		Education &Research		
	540		Medical & Health		
	550		Social Cultural and Religious		
	560		Utilities and Services		
	570		Cremation and Burial grounds		
600		**RECREATION**			Green
	610		Playground/Stadium/Sports Complex		
	620		Parks & Gardens-Public Open Space		
	630		Special recreational zone- restricted open spaces		
	640		Multi-open space (Maidan)		
700		**AGRICULTURE LAND**			Light green
	710		Agriculture		
	720		Forests		
	730		Poultry and Dairy Farm		
	740		Rural Settlements		
	750		Brick kiln & Extractive Areas		
	760		Water Bodies		
800		**SPECIAL AREAS**			No colour
	810		Old Built up (Core) Areas		
	820		Heritage & Conservation Areas		
	830		Scenic Value Areas		
	840		Other Uses		
900		**VACANT LAND**			No colour
	910		Built but un-occupied		
	920		Vacant under construction		
	930		Vacant developed but unbuilt		

Building code regulations (hybrid and flexible spaces). Adaptable and flexible landuse to be added in the masterplan to meet the reality. Following are the landuse provided by the Government.

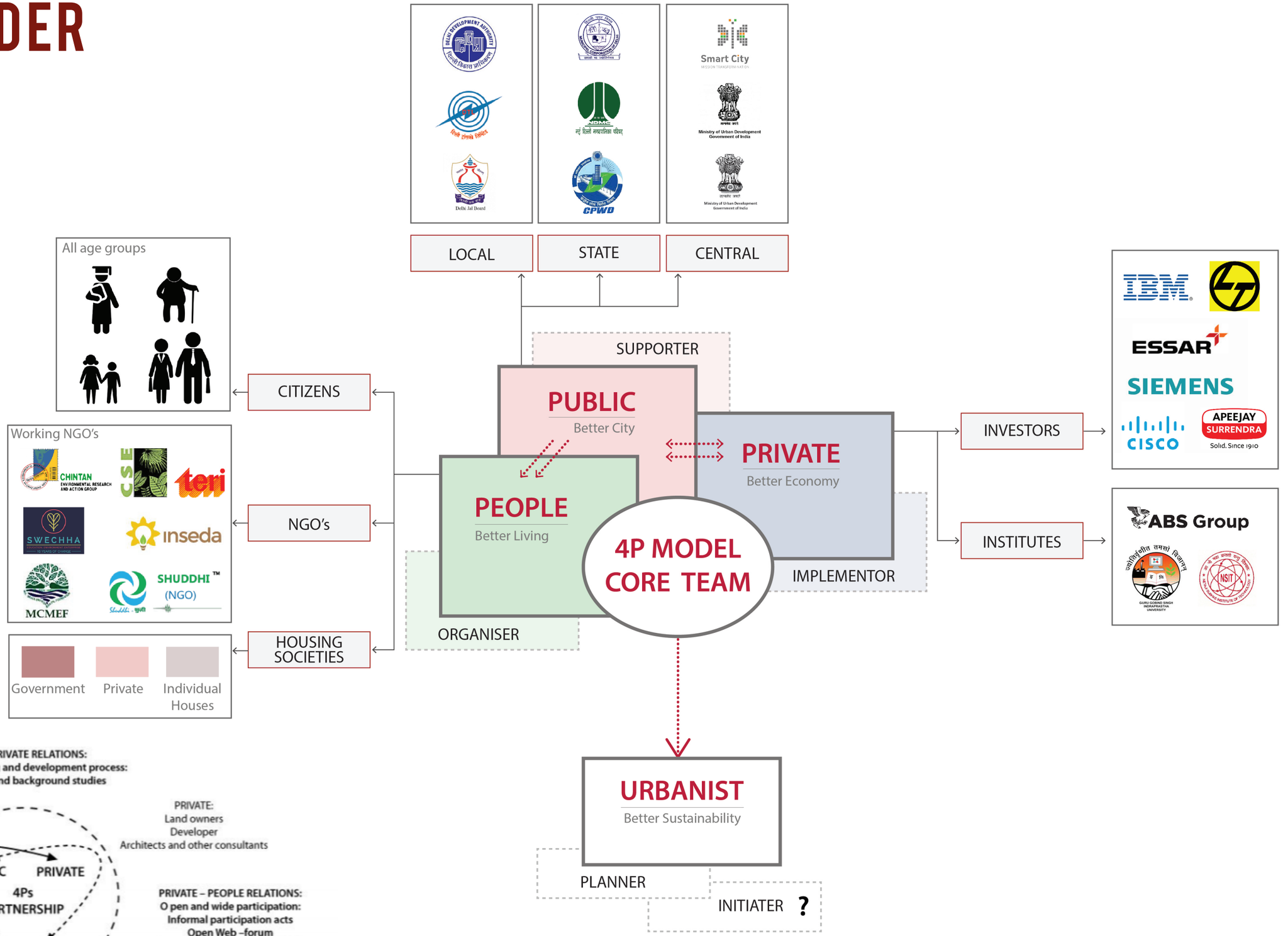
The breakdown of the rigid landuse can be done by following these rules.

S.No.	Landuse	Not to be clubbed with
1	Residential	Industrial, Cremation Ground, Brick-Kiln
2	Public Semi Public	Education, Medical Centres, Community Centres, Industries
3	Recreation	Public/ Semi Public
4	Agriculture	Industries that create soil pollution
5	Heritage and Conservation sites	Industries

DWARKA
(Living Lab Platform 1)

THE PROPOSAL- PROJECTS

STAKEHOLDER ANALYSIS

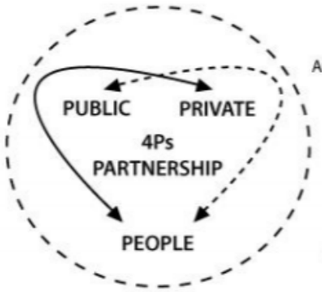


PUBLIC – PRIVATE RELATIONS:
PPP-based planning and development process:
Detailed plan and background studies

PUBLIC:
Local government authorities
City Urban Planning office
City Urban Planning Committee
City Council

PRIVATE:
Land owners
Developer
Architects and other consultants

PUBLIC – PEOPLE RELATIONS:
Formal participation
Independent specialist advisor group



PRIVATE – PEOPLE RELATIONS:
O pen and wide participation:
Informal participation acts
Open Web –forum
Co-operative planning with the Architecture School for Children and Youth
Two-Phased Internet questionnaire

PEOPLE:
Future and existing inhabitants
Civil Society Organizations

Informal, re-active impact
Formal, pro-active impact

SECTION 4

Indian Smart City Mission

Smart City Concepts and Learnings from the World

Planning and Design Strategies

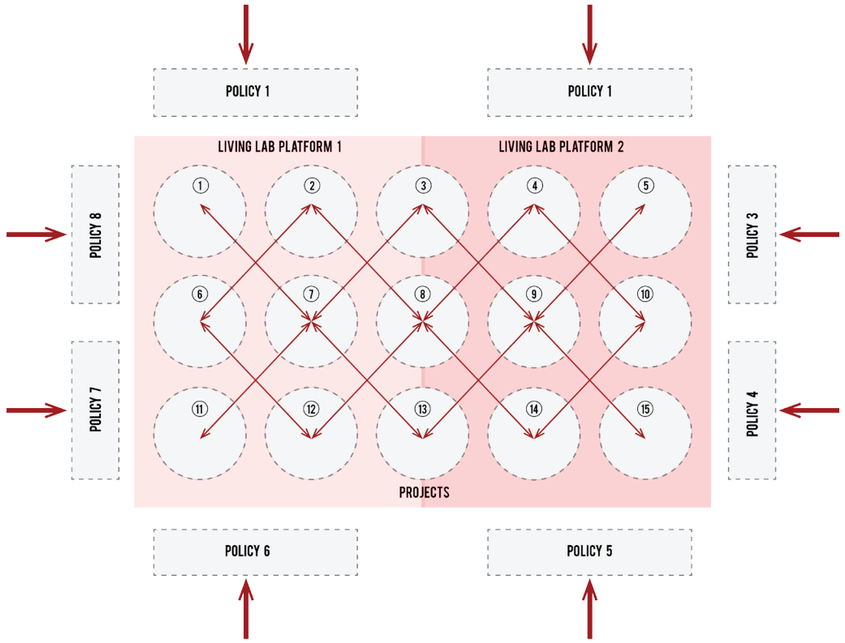
Project Conclusion & Recommendations

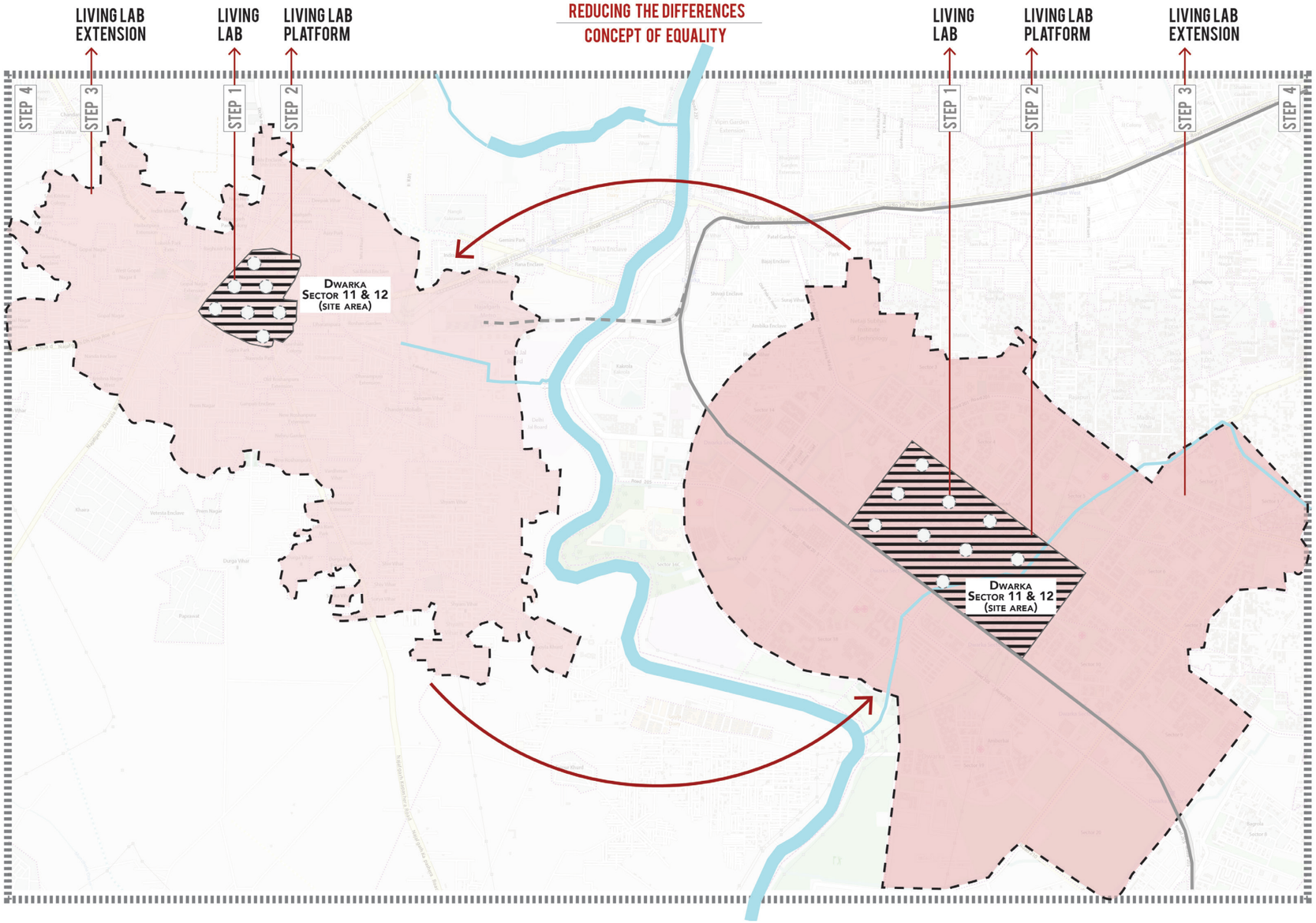
Conclusion | Expansion | Recommendation | Reflection

Have a bias towards action- let's see something happening now. You can break that big plan into small steps and take the smart steps right away.

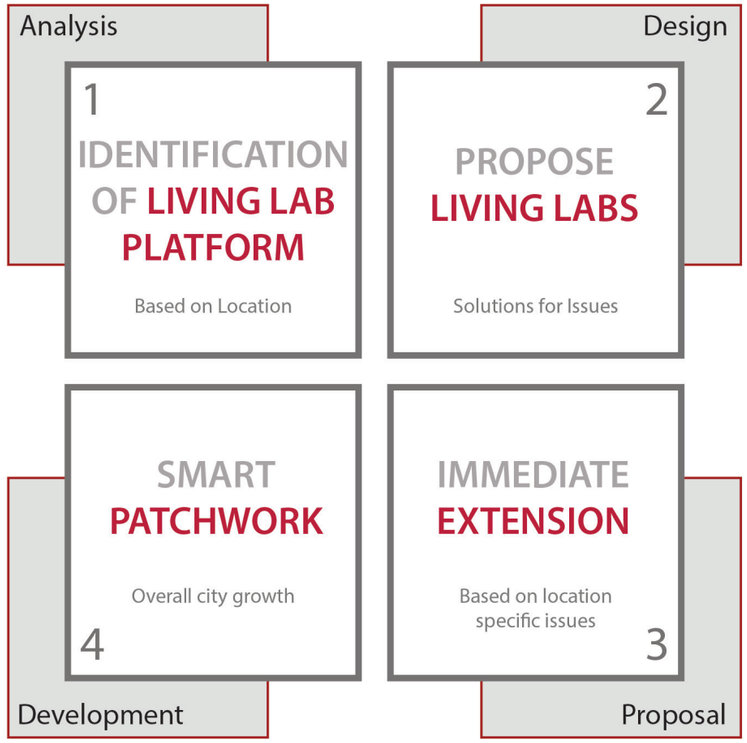
-Indira Gandhi

PROJECT CONCLUSION

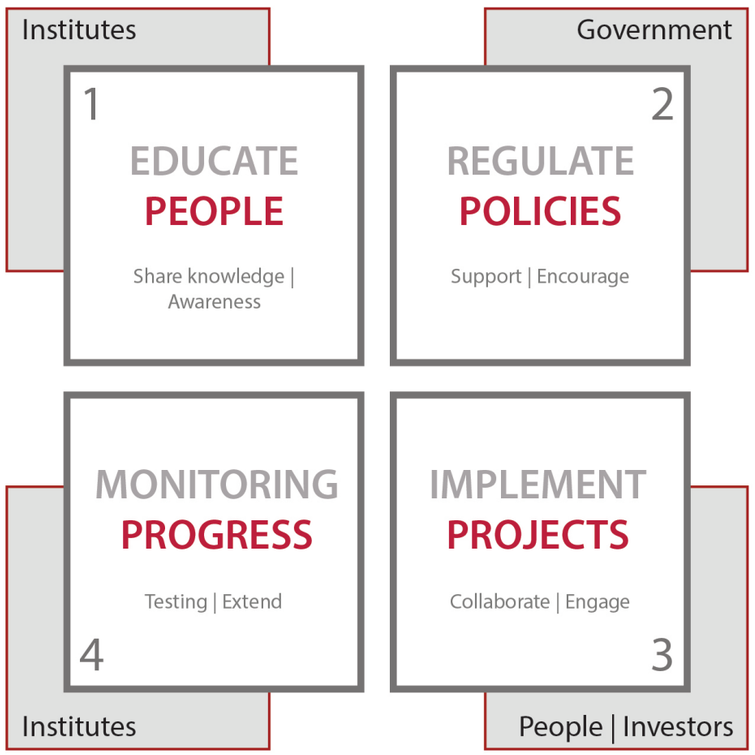




4 STEP MODEL

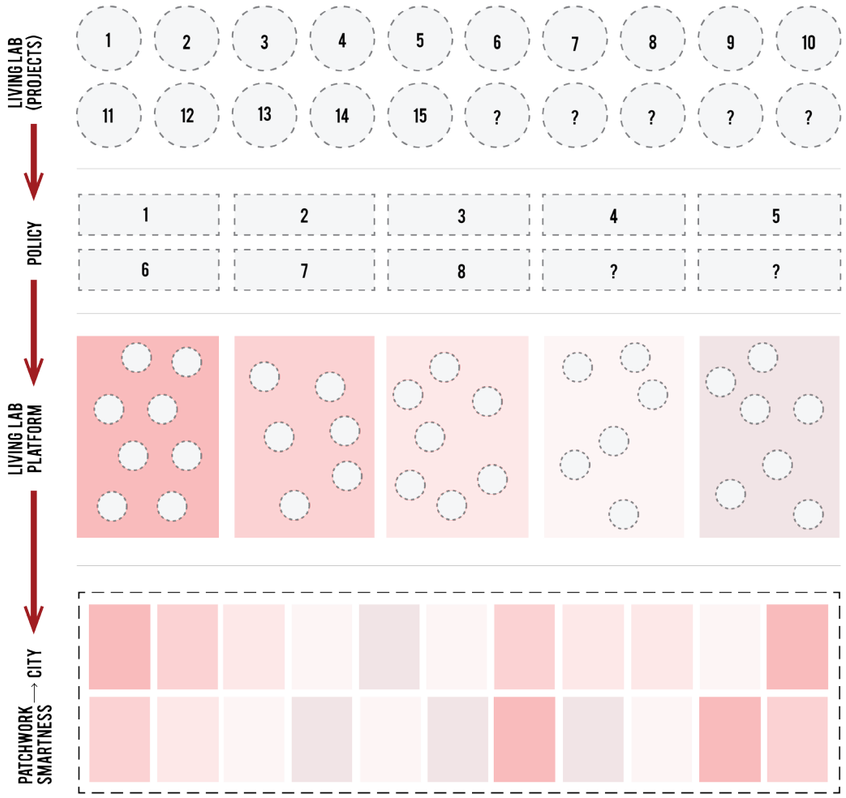


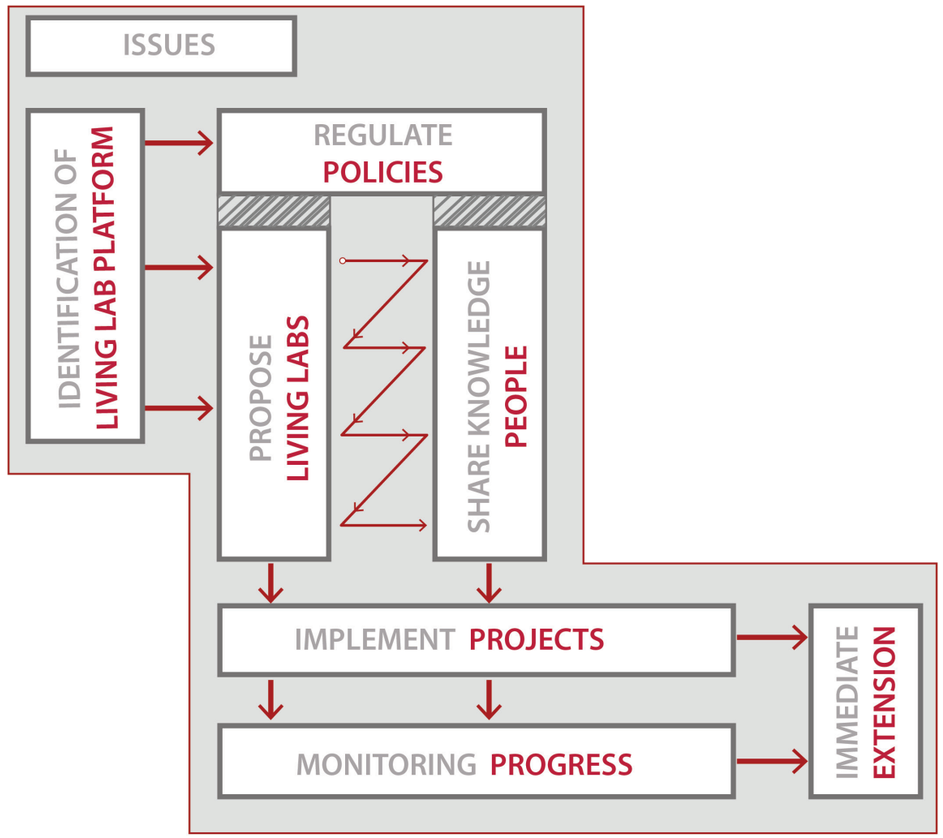
Design Model



Implementation Model

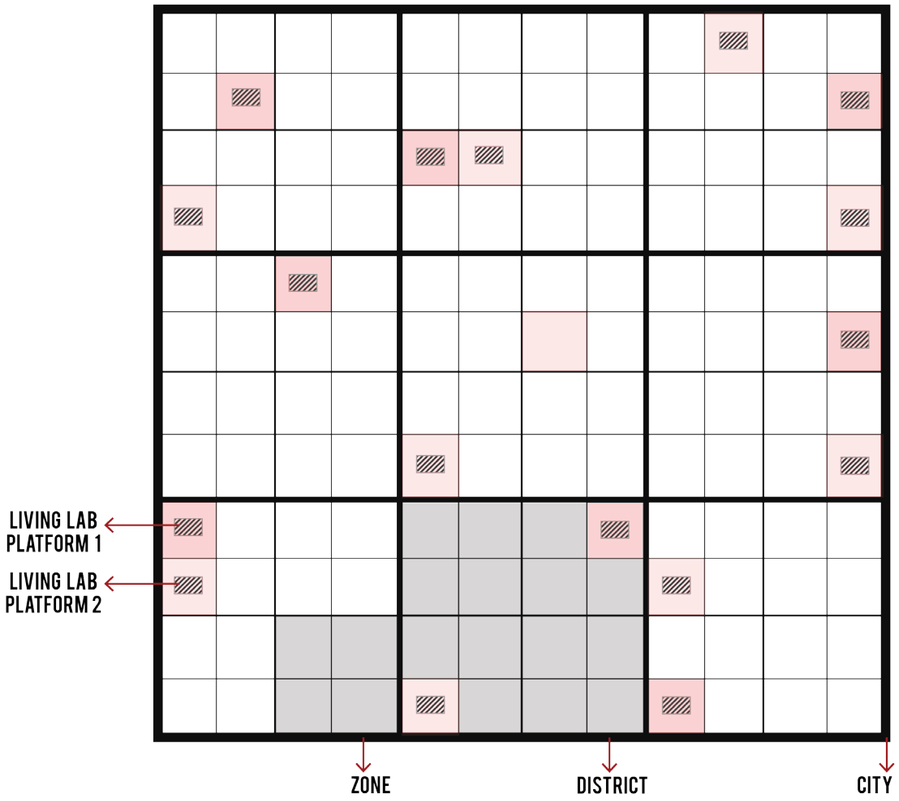
PROCESS OF IMPLEMENTATION

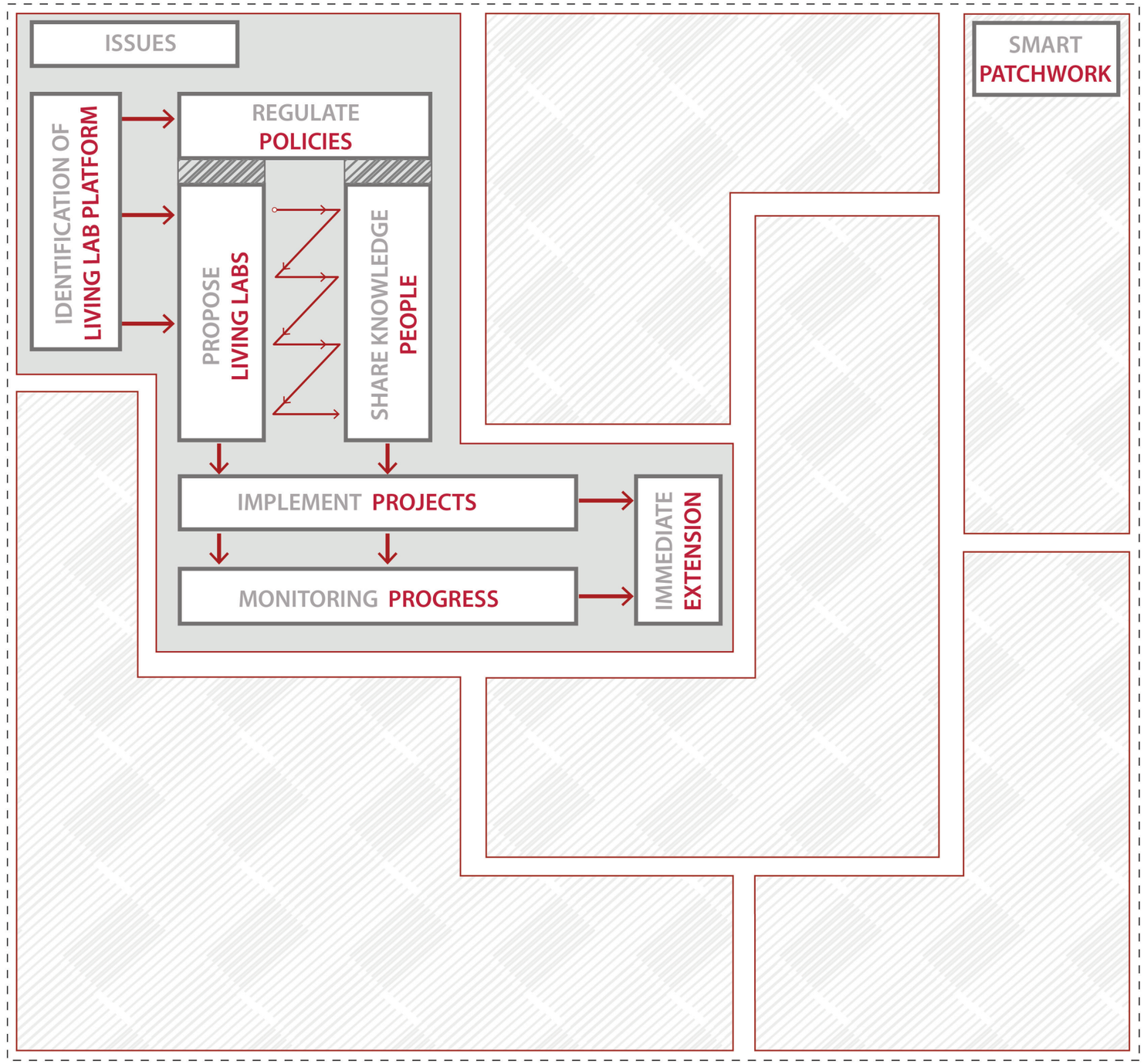




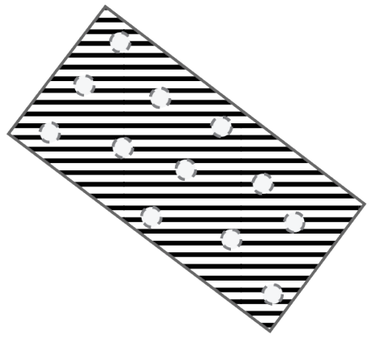
PROCESS OF IMPLEMENTATION

Smart Patchwork

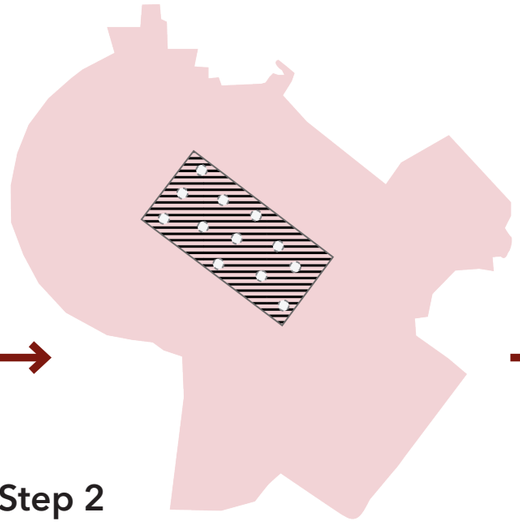




EXTENSION TO BIGGER SCALE



Step 1



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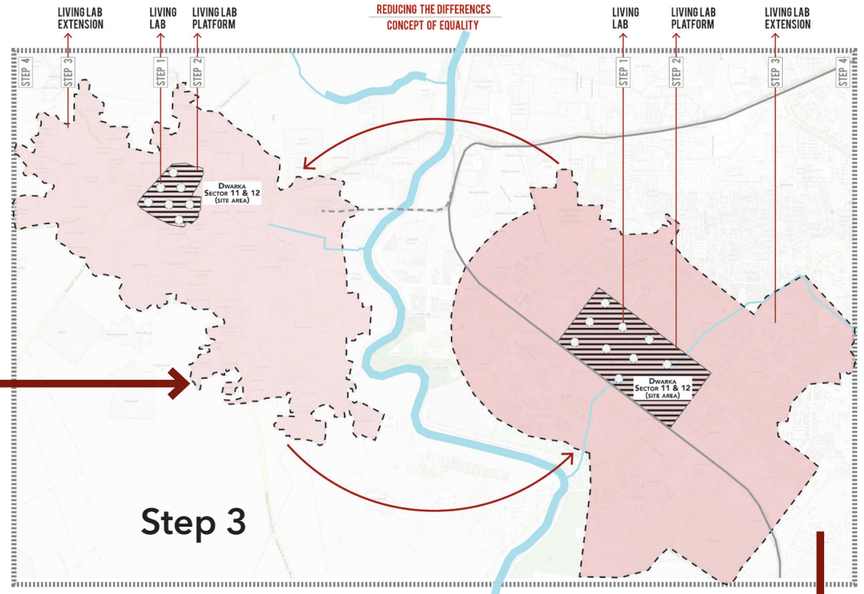
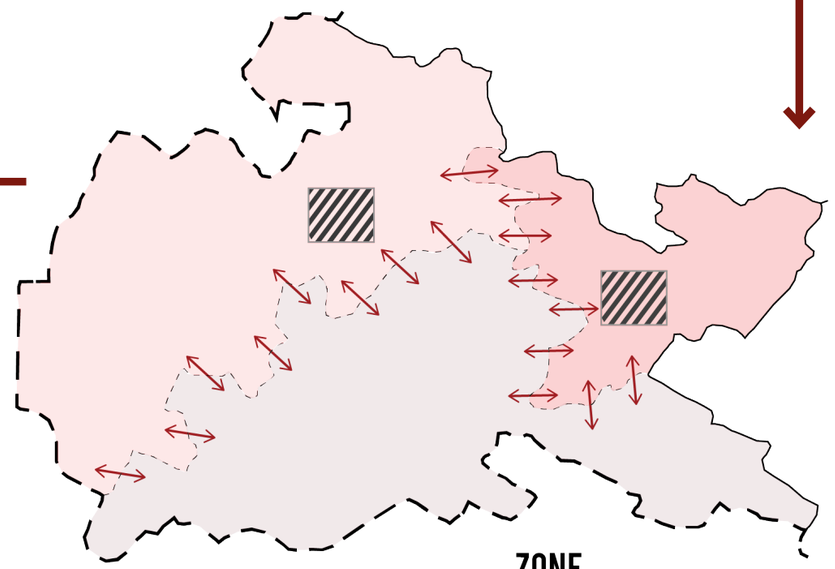
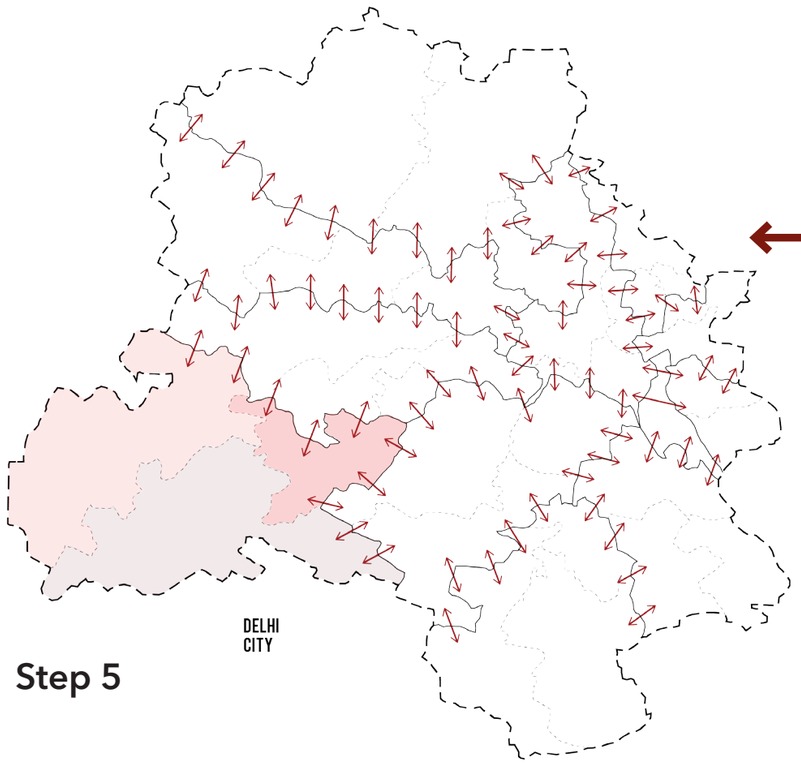


Step 3



Step 4

ZONE
DISTRICT



Step 5

RECOMMENDATION

- Right to Equality
- Right to Freedom
- Right against Exploitation
- Right to Freedom of Religion
- Cultural and Educational Rights
- Right to Constitutional Remedies

6 Fundamental Rights
Constitution of India

RECOMMENDATION

- Right to Equality
- Right to Freedom
- Right against Exploitation
- Right to Freedom of Religion
- Cultural and Educational Rights
- Right to Constitutional Remedies

→ Equality before Law

→ No Discrimination on the basis of Religion, Race, Caste, Sex or Place of Birth

→ Equality of Opportunity to all Citizens in matter of Public Employment

→ Abolition of Untouchability

→ Abolition of Titles

Addition

EQUALITY TO BASIC SERVICES AND INFRASTRUCTURE

↓

Reference

RIGHT TO AN ADEQUATE STANDARD OF LIVING

REFLECTION

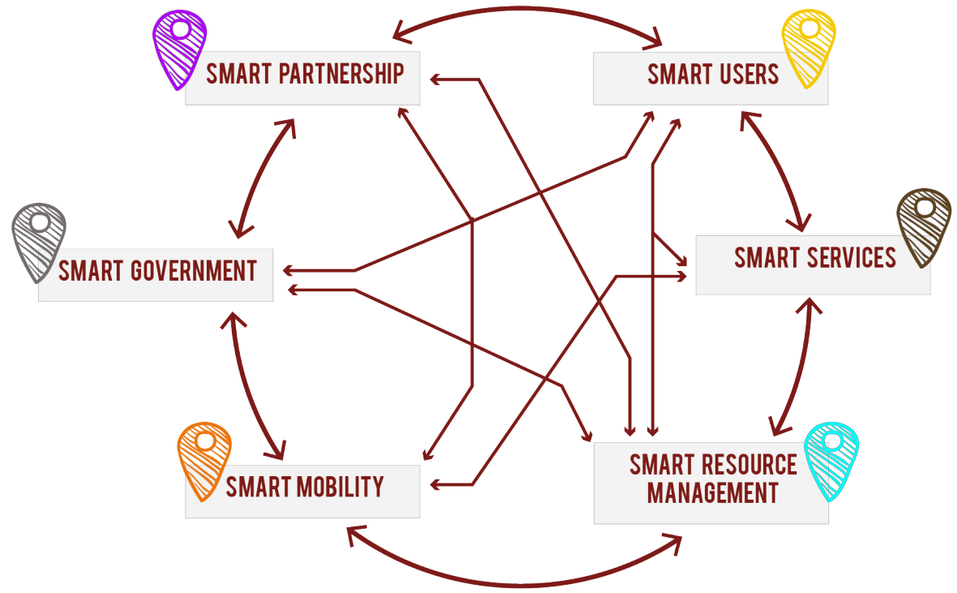
Universal Dimensions of Smart City

- **SMART GOVERNMENT** (PARTICIPATION)
- **SMART ECONOMY** (COMPETITIVENESS)
- **SMART MOBILITY** (TRANSPORT AND ICT)
- **SMART ENVIRONMENT** (NATURAL RESOURCES)
- **SMART PEOPLE** (SOCIAL AND HUMAN CAPITAL)
- **SMART LIVING** (QUALITY OF LIFE)

Indian Dimensions of Smart City

- **SMART GOVERNMENT** (TRANSPARENT MANAGEMENT)
- **SMART SERVICES** (EVEN DISTRIBUTION OF SERVICES)
- **SMART USERS** (CITIZEN ENGAGEMENT)
- **SMART MOBILITY** (PUBLIC TRANSPORT INFRASTRUCTURE)
- **SMART RESOURCE MANAGEMENT** (SUSTAINABILITY)
- **SMART PARTNERSHIP** (STAKEHOLDER COLLABORATION- 4P)

Hierarchy of smart aspects



European Network of Living Labs

“Empowering everyone to innovate”